



REVIEW

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The impact of newly qualified teachers (NQT) induction programmes on the enhancement of teacher expertise, professional development, job satisfaction or retention rates: a systematic review of research literature on induction

This review is supported by the Teacher Training Agency (TTA) to promote the use of research and evidence to improve teaching and learning

Review conducted by the NQT Induction Review Group

PREFACE

This report is the result of a preliminary study undertaken by the Induction Review Group between January and March 2003 which essentially involved a mapping exercise to identify the range and type of research studies addressing the research question, *'How does current research characterise the impact of induction programmes on new teachers in relation to enhancing teaching expertise, professional development, job satisfaction and retention rates?'* Results of the initial in-depth review are reported in Chapter 4. The Review Group plans further refinements of the mapping exercise and other in-depth reviews drawing on it.

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LIST OF ABBREVIATIONS

AACTE	American Association of Colleges for Teacher Education
AERA	American Educational Research Association
APEC	Asia-Pacific Economic Cooperation
BERA	British Educational Research Association
CPD	Continuing Professional Development
DfES	Department for Education and Skills
EPPI	Evidence for Policy and Practice Information and Co-ordinating Centre
EPD	Early Professional Development
ERIC	Educational Resources Information Centre
FE	Further Education
GTCE	General Teaching Council for England
HE	Higher Education
HEFCE	Higher Education Funding Council for England
ICET	International Council on Education for Teaching
NQT	Newly Qualified Teacher
Ofsted	Office for Standards in Education
PDF	Public Domain File
PEIY	Project of the Evaluation of the Induction Year
REEL	Research Evidence in Education Library
SSRU	Social Science Research Unit
TTA	Teacher Training Agency
UCET	Universities Council for the Education of Teachers

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SUMMARY

Aims

The main aim of this report is to identify and map studies that will shed light on the impact of induction programmes on teacher performance, career development and retention rates.

Review questions

The review question has been derived from an assessment of users' needs and is a compound question:

How does current research characterise the impact of newly qualified teachers (NQT) induction programmes on new teachers in relation to enhancing teaching expertise, professional development, job satisfaction and retention rates?

Methods

Relevant literature was found using electronic databases and 'by hand', exploring a wide range of online libraries, journals, reports, books and other formats.

Titles and abstracts were screened to identify relevant studies. The screening was completed by screening full texts in preparation for keywording, using EPPI-Reviewer software. This provided the review team with a 'map' of the available recent and relevant literature on the subject and, more importantly, indicated the studies which could be examined in more depth.

These studies related directly to the topic of the impact of NQT induction on teaching expertise, professional development, job satisfaction or retention rates. Data extracted from two of these studies, which engaged with NQT experience and induction support systems, have provided the basis for an in-depth review.

The review team consists of experienced teacher educators with expertise in induction research, a member of the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), a research officer and a serving teacher involved in an earlier project on induction. Newly qualified teachers and their tutors were also consulted and asked to comment on evidence-based syntheses. Further consultation with the Advisory Group and an independent peer review of the process will take place after the submission of a draft report.

Results

For the review, 475 titles and abstracts, and 146 full reports were screened to identify 51 studies that relate to the impact of induction on NQTs between 1998 and 2003. The majority of these originate from the United States of America (USA), although a significant minority arises from research in the United Kingdom (UK), Canada, Australia and New Zealand.

These studies were compared, using a number of variables in order to map out the research activity on the topic.

There is a growing consensus around the ingredients for successful induction programmes; in addition, there is strong support for claims that induction improves teaching effectiveness and promotes new teachers sense of wellbeing. Claims that induction improves short-term retention have moderate support but the evidence base for this is undoubtedly becoming stronger. The two studies reviewed in-depth correlate where they overlap in their consideration of a particular induction programme, Connecticut's Beginning Educator Support and Training Program (BEST).

One of the studies (Arends and Winitzky, 1999) looks at several induction programmes in greater depth in terms of their governance and funding, beginning teachers' experience, support providers, assistance processes and procedures, and professional development for both new teachers and their mentors. It goes on to make recommendations at the levels of policy, practice and research.

The other study (Youngs, 2002) prepared for the National Commission on Teaching and America's Future, is a report that both describes and evaluates research set in Connecticut during the two years 2000 and 2001. The research took place after the high attrition rate of new teachers in the urban state schools had become a matter of concern. The study examined the application of Connecticut's BEST programme in two of Connecticut's urban districts, Bristol and New Britain. The author reported on any consequential differences that occurred during the 2000-2001 school year and after the induction programme. Taking another factor into account, a high salary, the author also compared attrition rates of those involved in the programme with the rates for attrition in other school districts in Connecticut that did not use the programme or have the higher salary. The report aimed to show how two induction programmes were assessed, what a valid induction programme can do to improve new teacher expertise, and how a high salary combined with a valid induction programme can affect teacher retention. Outcome comparisons were made showing any differences from before and after the BEST programme assessment.

A synthesis of the findings of these two studies which are based on a combination of empirical work and programme evaluations suggests that, while there remains more to be learned about induction programmes and how best to ensure they impact on new teachers' expertise, professional development, job satisfaction and retention rates, the contours of our knowledge base can be sketched out around the following loci:

- It is vital to get clarity about the purposes of induction programmes in relation to policy; it is also vital to get transparency about the goals of induction programmes

in relation to practice; both are required for achieving their successful implementation and establishing appropriate accountability.

- To achieve clarity around purposes and goals, and to work out the implications takes time and therefore developing effective induction programmes based on sound research, high standards of performance and ethical conduct requires a lengthy process of piloting, evaluating and refining induction programmes.
- Induction delivery systems are complex and need to combine measures that focus on new teachers, experienced teachers who provide them with support, and structures that provide appropriate circumstances for successfully moving from novice to expert teacher status.
- Induction requires appropriate circumstances: new teachers need to be given reduced teaching assignments and structured opportunities for collaborative planning, goal-setting and review with mentors; similarly mentors require selection, preparation, release time and incentives for helping new teachers.
- Induction programmes work best when an effective training and professional development component is provided to support all role groups – new teachers, their mentors and principals.
- Good induction programmes, when combined with an attractive pay and conditions package, can make a measurable difference in improving the short-term retention of teachers.
- Political and financial support is essential at all levels and must translate into realistic resources, if propitious conditions for induction are to be achieved.
- Trends in teacher induction are discernable. The most clear of these is that towards extending support for new teachers and their assessment beyond the first year of teaching and to start thinking about early professional development that includes the first three years of teaching (or the first five years inclusive of initial training) with certification and accreditation for registered and/or chartered status being part of this process.

Conclusions

The strengths of the review lie in its transparent processes, its breadth of reference, its systematic approach and its ability to draw upon significant professional knowledge and experience. These have resulted in an accountable, authoritative and widely informed attempt to answer the main research question. The review has maintained openness to new evidence from diverse sources within different types of research. It has sought to map the extant literature and to assess a relevant sample for its educational significance with rigour. An analysis of the weight of evidence reveals that there can be reasonable confidence that the results of these studies, while not perhaps as comprehensive as educators might wish, can be treated with reasonable confidence in terms of their answering the questions about impact identified as significant to user groups.

Its weaknesses lie in the fact that not all the large number of studies identified for the mapping stage of the review could be keyworded due to the review group having to work to a very tight timeline. Of those screened, only a limited number were relevant to the focus of the review question and the sample of these able to be reviewed in depth was small. The implication of such constraints is that more time is needed to cover the field comprehensively and to re-visit the findings of relevant research for its full implications to the review's research question.

The implications for policy, practice and research can be stated fairly concisely. In terms of policy, a multifaceted set of recommendations emerge clustered around various levels of agencies that have direct responsibility for assuring the quality of teachers entering the profession. These have to do with three categories of policy engagement:

- clarifying purpose, programme design and specification, which are symbiotically related to a point of view or perspective on the role of teachers and learning to teach;
- defining the categories whereby conceptions of induction are prescribed by a set of regulations, standards and protocols for ensuring a high quality and sustainable teaching force, supported by exemplification materials suitable for adaptation to local practice;
- translating political commitment into financial resources that can be deployed cost effectively and efficiently while devolving budgetary, management and quality responsibility to allow flexibility and diversity while demanding accountability.

The overriding policy implication is that adapting national conceptions to local situations seems to be the best way to proceed. There is clearly a trend to see induction as part of a continuum and to extend support for new teachers beyond their induction year into the first three years of teaching via some form of structured (as opposed to merely episodic) early professional development.

In terms of practice, a clear set of implications arise from moving to a performance-based system predicated on standards aimed at defining what a new teacher should know and be able to do and developing assessment procedures that can evaluate teachers attainment of the standards in fair and reliable ways. Issues of standardising entitlement, support, new teacher assessment and certification/registration dictate a more consistent and dependable experience of induction across settings than is the case at present. The evidence of good practice points towards this being achievable; but, in order to pervade the system, such practice will require a transfusion of induction-supporting attitudes and dispositions into the bloodstream of the teaching profession via a revitalised notion of the psychological contract required with its aspiring members.

Research continues to be needed into induction. Particular recommendations that can be made in a robust fashion relate to the content and type of such research.

The following were identified as areas in which research needs to be carried out:

- distance learning support for inductees;
- effective mechanisms for monitoring support structures for inductees at local level;
- productive pedagogical tools and evidence-carriers, such as professional development portfolios and teacher transcripts that would better support the concept of a continuum from initial training through induction to early professional development and promote a commitment to lifelong learning as a sine qua non of professionalism;
- mentor skills, attitudes and behaviour that generate support that is not constraining in its conventionality and encourages confident innovation, creative experimentation and a capacity to embrace accelerated change.

In terms of research approaches, there is a dearth of large-scale longitudinal studies that carry over from initial training to induction and beyond, and look for statistically and educationally significant variables. There is also a need for more research with qualitative outcomes able to provide multi-factored analysis of the impact of induction experiences and interventions in different contexts and on diverse individuals. However, our scrutiny of the literature suggest that such research would benefit from being less textured by ethnographic and phenomenological approaches, and more open to design experiment methodology and hypotheses testing configurations. Finally, there is a need for careful comparative study of trends emerging from international studies together with an analysis of their potential to provide taxonomy of teacher induction reform.

1. BACKGROUND

1.1 Aims and rationale for current review

This report is the result of a preliminary study undertaken by the Induction Review Group between January and March 2003, which included a mapping exercise to identify the range and type of research studies addressing a research question focusing on the impact of induction on the early career prospects of newly qualified teachers (NQTs).

The present report's purpose is to identify and map a number of studies that focus on the impact of induction programmes on NQTs and to undertake an in-depth review of studies identified as addressing the context of teacher induction, the experience of new teachers, and the role of mentors and other support systems.

The rationale for this exercise derives from the fact that there is renewed interest in teacher induction and the associated programmes and mentored support, with a number of fresh attempts to look at policy imperatives and research best practice in this area. It is therefore timely to take stock of the extant literature in the field so as to establish the parameters of the relevant knowledge base, ascertain how secure this is and indicate future research priorities. The methods used include a systematic review of other studies from the following English-speaking countries - UK, USA, Canada, New Zealand and Australia - along with relevant English language studies from other parts of the world, dating from 1998 to April 2003, with a view to gathering different perspectives on the topic of induction. The overall approach adopted is consonant with the growing recognition in England of the need for systematic and cumulative evidence of a range of types to inform policy and practice so as to increase the potential for using research evidence in policy evaluation and development (Sebba, 2003). Because governments have become more interested in what is being called 'evidence-based' or 'evidence-informed' decision-making (Davies, 1999; Levacic and Glatter, 2001), systematic reviews are now a key decision-making tool in many areas of evidence-based policy and practice. This in part reflects a change from education reform being understood primarily as a matter of designing controls to one of developing capacity. EPPI-Centre review work is at the heart of investigating a future evidence base for capacity-building policy and practice by providing an important stimulus to debate about methods and purpose, key methodological principles and developments, and opportunities for further research. Potentially it can also offer policy and practice perspectives to integrate aggregate research findings in the field, thereby increasing access to research syntheses and providing the realistic prospect that policy-makers and practitioners can be better informed. In this respect, the Induction Research Team has built up a bank of reference materials incorporating both accepted and rejected evidence that should allow a considerable database to be constructed with the potential to influence future policy initiatives, practice and priorities in this area.

1.2 Definitional and conceptual issues

In order to proceed with clear categories and concepts, stipulative definitions were generated for each of the key terms in the study: induction, impact, teacher expertise, job satisfaction, professional development and retention. A broad understanding of educational practice was adopted in terms of patterns of cooperative human activity in and through which learning takes shape over time and in response to a wide range of experiences, interactions and circumstances together with an appreciation of the role of reflection and deliberation in relation to explicating this.

In the context of this review, the following broad characterisations of key terms and concepts have been adopted:

The term induction is taken to mean supported and assessed entry to full professional teacher status. Induction programmes include designated release time from teaching; support from experienced colleagues; the setting of objectives and targets that are linked to CPD activities and courses to meet the needs of the new teacher and assessment against performance standards. Generally speaking, additional support for NQTs is elicited from many quarters of the school and from others outside its confines (Bubb *et al.*, 2002, p 87).

Impact is defined as the outcome of such induction programmes in terms of teacher expertise, job satisfaction, professional development and retention. Specifically, has induction improved NQTs' resourcefulness and repertoire for classroom work? Has it helped them to be better informed and develop deeper levels of understanding with regard to both curriculum and pedagogy, allowing them to gain new awareness about the management of teaching and learning? Has it led to motivational, attitudinal and affective outcomes for individual NQTs, especially in relation to their competence and confidence to effect change in their own practice and participate in collective effort within their institutions?

The Department for Education and Employment (DfEE) (2000) advised by the General Teaching Council for England (GTCE) (2000) put forward a code of practice outlining clear principles of professional development for teachers. It is now recognised that professional development can serve a range of purposes to meet the diverse needs of professionals in the field by providing the possibility of recurrent, incremental learning opportunities, accompanied by instruction, tutoring, coaching, mentoring or similar on-going support (Totterdell, 2002b; cf. GTCE, 2003). The aim of all professional development activities should be to bring about a change in the thinking and practice of participants, which in turn will have a positive impact in the workplace. Therefore, professional development should have the following impact:

- Improving the thought and practice of teachers and their provision for students
- Developing the personal and professional attributes, knowledge, skills, understanding, experience and values of teachers
- Helping teachers to gain confidence and competence and maintain them.
- Providing teachers with a means of valuing their learning and helping them demonstrate it to others
- Enabling teachers to see everyday practice as the actual source of professional learning

(Bubb *et al.*, 2002, p 184)

Job satisfaction can be indicated through a number of factors: people's experience matching their expectations; their working environment being engaging, enabling and supporting; their feeling of being valued, respected and rewarded; and their workloads, absenteeism, stress and retention being actively managed (cf. Audit Commission 2002, p 3).

Teacher retention is measurable. Critical issues converge around the opportunity to experience the intrinsic satisfaction of teaching, to pursue academic specialisms, and to make a positive difference in young people's lives, in a job that is satisfying and attracts a reward package that meets teachers' needs. Changes in trends, whether as a result of pull factors relating to compelling alternative work or life options, or push factors influenced by negative factors teachers are experiencing in their roles are identifiable, although the latter are inherently more controllable than the former. External factors affecting retention include housing and commuting costs, familiarity with localities, public perceptions of teachers' worth, career breaks or career changes. Internal factors include good induction and professional development plus, more generally, support, resources, workload, felt autonomy, pupil behaviour, levels of bureaucracy and early retirement options (Audit Commission, 2002; Organisation for Economic and Co-operative Development (OECD), 2002; Menter *et al.*, 2002; Totterdell, 2002a).

1.3 Policy and practice background

There is currently much interest by policy-makers and professional educationalists in the value and impact of induction schemes for new teachers, especially in relation to their ability to contribute to raising standards and to improve teacher retention rates (OECD, 2002). As Villani (2002) observes: 'The idea that beginning teachers require a structured system to support their entry into the profession has moved from the fringes of the policy landscape to the centre. It is now generally recognised as a critical component of a comprehensive approach to teacher development'. In America (Scott, 2001; Shields *et al.*, 2001; Youngs, 2002), Scotland (McNally, 2002), Northern Ireland (Moran *et al.*, 1999) and England (Totterdell *et al.*, 2002b), supported induction related to specified new standards of performance expected of new entrants to the profession has become the norm and associated with this, new models of early professional development are emerging (Office for Standards in Education (Ofsted), 2003; Rogers and Babinski, 2002; and see www.nfer.ac.uk). Consequently, induction and associated practices of supporting and sustaining new teachers have begun to feature prominently in the research literature (see, for example, Beijaard and Papanaoum, 2002) and have increasingly become a focus of attention at annual conferences of teacher education associations, such as the Universities Council for the Education of Teachers (UCET) and the American Association of Colleges for Teacher Education (AACTE), as well as at annual research conferences, such as those convened by the British Educational Research Association (BERA), the American Educational Research Association (AERA) and the International Council on Education for Teaching (ICET).

One notable example of these trends appears in England where induction was introduced in September 1999. Induction must be served by all NQTs who obtained qualified teacher status (QTS) after 7 May 1999 and wish to be employed in maintained schools and non-maintained special schools. It aims to allow NQTs to

build on their initial teacher training, where strengths and development needs will have been identified, and sets the pace and direction for their professional development. It also aims to ensure that all new entrants to the teaching profession reach a uniformly high standard and are ready for the challenges they will face in the classroom.

A recent report by the Institute of Education (Totterdell *et al.*, 2002a), on behalf of the Department for Education and Skills (DfES), involved surveys of NQTs undergoing induction in 1999-2000 and 2000-2001. The key findings and the planned follow-up action by DfES are as follows:

- There is overwhelming agreement among the headteachers and induction tutors that statutory induction is helping NQTs to be more effective teachers.
- The introduction of statutory induction has improved the quality of provision for NQTs and helped raise standards. There is, however, still more work to be done to further improve induction. In particular, the DfES needs to ensure that all NQTs receive their entitlement to a reduced timetable (reduced by 10%).
- The DfES has worked with the Teacher Training Agency (TTA) to consult on revised Induction Standards and the Career Entry Profile (CEP). The Department has also worked with the TTA on clarifying and consolidating the Induction Guidance.
- The School Teachers' Review Body have agreed in principle to changes in teachers' contracts which include guaranteed 'professional' time, which should benefit induction tutors. The review body is collecting the evidence for a supplementary report on workload, to be published in April 2003.

Funding for statutory induction programmes for teachers entering the profession has been available to schools since 1999. Additionally, a set of statutory induction arrangements, supported by comprehensive guidelines (TTA, 1999) have aided school managers in the introduction and socialisation of NQTs into their schools in a way that is congruent with the present focus on performance management (Totterdell *et al.*, 2002a; cf. Bubb *et al.*, 2002). In line with the points outlined above, refinements to the induction arrangements have now been made by the TTA (TTA, 2002, and 2003a) and revised standards have been put in place (TTA, 2003b).

1.4 Research background

An American review of research on induction (Arends and Rigazio-DiGilio, 2000) summarises previous reviews of the topic by Darling-Hammond (1995) Gold (1996) and Huling-Austin (1990, 1992) as all reaching similar conclusions. The goals for induction programmes have remained virtually unchanged, and there appears to be evidence accumulating that carefully constructed and managed induction programmes – designed on the basis of outcome-based objectives for the participants and monitored for progress against staged targets for achieving the specified outcomes – achieve their goals. The recommendations for mentor training and for reducing the workload and stress on new teachers have also been quite consistent (cf. Conley and Woosley, 2000). Similar factors are highlighted by the joint US Department of Education, the Education Forum of APEC and Pelavin Research Institute study (Moskowitz and Stephens, 1996) in terms of basic features and common characteristics of successful programmes and these triangulate with key

findings from a major evaluation relating to the California Beginning Teacher Support and Assessment (BTSA) Programme (Shields *et al.*, 2001). Other research evidence from America ‘suggests that states and districts like Cincinnati, Ohio; New Haven, Connecticut and New York City’s District 2, which have invested heavily in improving teacher induction and professional development as part of their long-term recruitment strategy, have a far greater capacity to maintain an adequate supply of teachers while simultaneously ensuring that they will be prepared to teach effectively’ (Rustique-Forrester and Haselkorn, 2001 citing research by Rustique-Forrester, 1995; Elmore, 1997 and Snyder, 1999).

In England, revisions to the CEP, based in part on research-based evaluation findings (Totterdell *et al.*, 2002a), have enhanced its potential to be used as a key bridging tool between initial training, induction and early professional development. The changed emphasis, which now focuses on the process whereby new teachers are developed and move from novice to expert status, is timely. Induction is being established as part of a continuum – starting with how teachers are recruited, trained and appointed, through how they are inducted and supported, to finally, how they are assessed, rewarded and developed professionally – in line with other similar professions (GTCE, 2000). The early signs are encouraging. Ofsted inspectors confirm high standards among NQTs (Miliband, 2003, p 2; Thornton, 2003, p 16). Moreover, both Totterdell (2002b) and Menter *et al.* (2002) and their colleagues assert that quality induction is axiomatic to retention rates, job satisfaction and the development of the sort of teacher expertise that unleashes new teachers’ energies so as to merit the ascription ‘highly qualified’ in terms of their accomplishment.

Nevertheless, some quandaries remain. For example, in the context of devolved budgets and the absence of ring-fenced monies for induction, how can head teachers best be persuaded of the value for money inherent in investing in adequately funded induction arrangements for new teachers given all the other demands on their budgetary outlay? Similarly, what can be done to eliminate the phenomenon that Bubb *et al.* (2003) refer to as the ‘rogue school’, which not only fails adequately to support new teachers but sometimes exploits them in an unprincipled way? Finally, how can the continuity of development, so often proclaimed as a principal aim of induction, be made more consistent so that induction goals, school orientation and professional development activities experienced by NQTs provide what Tickle (2000) describes as the ‘appropriate circumstances’ for early professional formation and others (Bubb *et al.*, 2003) refer to as the ‘propitious conditions’ under which new teachers can thrive and their creative, innovative energies be released for teaching and learning in classrooms? A more systematic approach to the induction of new teachers that extends from pre-service professional preparation and formation through to the professional development of teachers during their early careers and promotes a proactive approach to supporting and sustaining teachers based on an ethic of professional care may be the way forward (see, for example, Tasmanian Educational Leadership Institute, 2002; Canniff and Shank, 2003).

1.5 Authors, funders, and other users of the review

The authors of the review are all members of the Induction Review Team which consists of experienced teacher educators with expertise in initial training, induction, induction research and early professional development, a member of the EPPI-

Centre with expertise in evidence-based research, a research officer and a serving teacher involved in an earlier project on induction who is also involved in an action research project. This systematic review was funded by the TTA as part of a series of reviews of research for Initial Teacher Training. The methods used were devised by the EPPI-Centre at the Social Science Research Unit (SSRU), Institute of Education, University of London. User perspective is strong in the membership of the Review Group and Advisory Group. A member of the project team is a serving teacher and was formerly a participant in an extensive evaluation research project on induction in England. Each member of the Advisory Group has been consulted at the inception, screening, mapping and synthesis stages of the review. Through the respective secondary and primary age-phase course co-ordinators, Sara Bubb and Dr Eileen Carnell, course participants on the Institute of Education's NQT courses were also consulted and asked to comment on evidence-based syntheses.

1.6 Review questions

With this aim in mind, the main review question for the overall study of the literature has been formulated as follows:

How does current research characterise the impact of NQT induction programmes on new teachers in relation to enhancing teaching expertise, professional development, job satisfaction and retention rates?

2. METHODS USED IN THE REVIEW

2.1 User involvement

Input to the review from research users was achieved via the Course Team of the Institute of Education's Master of Teaching Programme through the good offices of the course leader, Dr Norbert Pachler. Additional input was solicited from NQT lead tutors working on the Institute's Primary NQT courses and eleven secondary subject courses facilitated by the two NQT Co-ordinators, Dr Eileen Carnell and Sara Bubb.

A copy of the protocol was sent to all members of the NQT team at the start of the project. At regular intervals, the team were informed of progress and invited to offer feedback and to make contributions where necessary. Face-to-face meetings were held with members of the review team before the coding of studies to agree valid points with which to screen studies. This report has been sent to the advisory group for comment and contributions received from members of this group have been noted.

2.2 Identifying and describing studies

2.2.1 Defining relevant studies: inclusion and exclusion criteria

To ensure that only recent and relevant studies focusing on the review question were selected for mapping, an explicit list of criteria for inclusion was developed.

1. To have been published between 1998-2003
2. To show relevance to the foci of the research question; studies must include information about NQTs, beginning or novice teachers and induction procedures
3. To show empirical data
4. The focus to include early years, primary, secondary or sixth-form college phases
5. To originate from the UK, the USA, Australia, Canada and New Zealand where the dominant language and education systems are similar, or to have an English language provenance together with a relevant focus
6. Not a review

Studies were excluded for the following reasons:

1. Published before 1998
2. Off topic; studies which did not report information about NQTs, beginning or novice teachers, or details of induction procedures
3. Presenting no empirical data
4. Main focus further education (FE) or community colleges
5. From countries not geographically relevant to this review
6. Represent merely reviews of past studies

The decision to limit studies included to those produced within the last five years (1998-2002) was taken for three reasons: firstly, to ensure the relevance of the studies included to the user group specifically and more generally to the policy and practice context in which the review will primarily be used; secondly, because other reviews of earlier literature on induction already exist (see Arends and Rigazio-diGilio, 2000; Feimen-Nemser *et al.*, 2000; Humphrey *et al.*, 2000); and finally, to help to make the project realisable within the time available for this systematic review.

2.2.2 Identification of potential studies: search strategy

The NQT Induction Review Group aimed to identify as many relevant studies as possible to within agreed criteria of time, types of studies, geography and educational phase, in order to construct a map of research on the topic. Studies were found either through personal contact at the Institute of Education, bibliographies, electronic databases and library handsearches focussing on a limited number of journals in which it was thought likely induction-related studies would be reported. Appendices 2.2 and 2.3 list these databases and journals respectively, together with the keywords and search terms used to access relevant studies online. The same keywords were used for each database searched. The focus of the searches was on the identification of studies that described aspects of teacher induction and/or other definitions within the research question. Citations were stored on Endnote 5; these were then screened for inclusion or exclusion. Complete copies of the included citations were collected either through the Institute of Education Online Document Collection facility (E*subscribe) or through library collections. The Educational Resources Information Center (ERIC) and Ingenta online resources provided PDF copies of full texts to map the research.

2.2.3 Screening studies: applying inclusion and exclusion criteria

All studies identified were screened according to the criteria set out above in section 2.2.1. Where they were found to be of no relevance to the review, in terms of the inclusion criteria, studies were excluded.

2.2.4 Characterising included studies

The included studies were then coded using the EPPI-Centre (2002a) Core Keywording Strategy, version 0.9.7, and the NQT Induction review-specific keywords.

Core keywording included the following categories:

- identification of report
- status
- linked reports
- language
- country/countries in which the study was carried out
- topic focus

- curriculum
- programme name
- type of study
- population focus/foci of the study
- educational settings
- type(s) of study this report describes

Since there was a need to identify those studies that addressed the impact of induction on the progress of new teachers during and after the induction and early professional development phases, the most relevant keywording categories for this review were the specific topic foci and population foci. Each paper was again coded, therefore, using the NQT Induction review-specific keywords as shown below.

NQT Induction review-specific keywords

Specific topic focus of study

- professional development (early)
- professional development (continuing)
- teacher induction
- teacher retention
- teacher performance
- teacher standards
- mentoring
- initial teacher training
- in-service training

Specific population focus of study

- newly qualified teachers
- beginning teachers
- experienced teachers
- mentors

The above codes were used to produce a descriptive map of all studies meeting our inclusion criteria. Codes were entered onto, and analysed, using EPPI-Reviewer, the EPPI-Centre's specialist reviewing software.

2.2.5 Identifying and describing studies: quality assurance process

Team members in pairs examined identical lists of titles and abstracts, applying the inclusion and exclusion criteria. The results of this exercise were then compared. To ensure a consensus in the ways in which team members identified studies for the review, a similar exercise was carried out for keywording. In the event of disagreements, a discussion was organised to clarify the relevance of the inclusion/exclusion criteria to the study/studies concerned until a consensus was reached. In this way, the team agreed the numbers and types of studies that were to become part of the in-depth review. To validate this exercise, a third party, Dr Nicholas Houghton, a staff member at the EPPI-Centre, also participated. Where there was disagreement, team members discussed differences to reach the

necessary consensus. This occurred on two occasions; the team met to ensure that an understanding of the method used to identify relevant studies was reached by all members of the team.

2.3 In-depth review

2.3.1 Moving from broad characterisation (mapping) to in-depth review

After an examination of the contours of the mapping exercise conducted by the review group, the studies for in-depth review were selected. It was decided to concentrate on studies that engaged with different dimensions of the research question specifically with the context of new teachers' experience of induction and the support mechanisms involved in induction programmes. This narrowing down of study choices then created the following list of inclusion and exclusion criteria:

- (i) Descriptive studies only (and not exploration of relationships or evaluations)
- (ii) Current teacher induction programmes (those that have been introduced and were in operation for NQT induction only in the last four years)
- (iii) Higher education, government and local initiatives
- (iv) Engaging with issues of teacher expertise, professional development, job satisfaction and retention
- (v) Involving more than one location
- (vi) Involving a wide induction programme
- (vii) Involving more than one educational phase
- (viii) The justification for choosing studies of these types and foci was based on the relevance to the review question and, in particular, to the probable and predictable user group (HE personnel).

The corresponding exclusion criteria are as follows:

- (i) not descriptive studies only (i.e. exploration of relationship or evaluations);
- (ii) not current teacher induction programmes
- (iii) not higher education, government and local initiatives
- (iv) not engaging with issues of teacher expertise, professional development, job satisfaction and retention
- (v) in one location only
- (vi) not involving a wide induction programme
- (vii) not involving more than one educational phase

2.3.2 Detailed description of studies in the in-depth review

The EPPI-Centre Data-Extraction Guidelines (2002b) were applied to the studies that met the criteria for in-depth review. Reviewers were then able to extract data on the studies that were identified as having greatest relevance to the research question. Details of these studies and their value to this review are found in Chapter 4.

2.3.3 Assessing quality of studies and weight of evidence (WoE) for the review question

The studies chosen for data-extraction were examined closely by three members of the review team. By using the EPPI interrogation facility, assessments of the execution of the studies selected, in terms of relevance, context, sampling, methodology, results as well as validity and reliability (WoE A), were carried out.

The second WoE criterion used for this in-depth review involved the identification of the extent to which the study used the optimum design that would best answer the research question for the review (WoE B).

The third WOE criterion used for this in-depth review involved the identification of the extent to which the study was relevant to the research question for the review (WoE C).

Finally, the overall WoE the studies would provide to answer the research question in this specific systematic review was assessed using the three domains above.

2.3.4 Synthesis of evidence

The results of the data-extractions were explored to elicit common elements between the studies. The synthesis, in this case, pertains to how best to ensure induction programmes impact on new teachers' expertise, professional development, job satisfaction and retention rates in the context of best practice scenarios and supportive political and financial commitments by central and local government.

2.3.5 In-depth review: quality assurance process

The methodological guidelines devised by the EPPI-Centre were followed at this stage as with every other stage of the process with three members of the Review Group carrying out independent data-extractions of each study in the in-depth review, one of the three team members being involved in both the studies. The data-extractions were then reconciled by the team member working on all the studies (in consultation with the other members) and the reconciliations checked and commented upon by Dr Nicholas Houghton, the EPPI-Centre member of staff acting as consultant to the project. Further discussion of the reconciled outcomes of the in-depth review process occurred at the draft reporting stage.

3. IDENTIFYING AND DESCRIBING STUDIES: RESULTS

3.1 Figure 3.1: decision flow of the search

The inclusion and exclusion criteria from both the EPPI-Centre and the NQT advisory and review groups (listed in section 2.2.4) were applied by searching electronic databases using the 'date' (that is, the year), in the first instance. The search of all sources resulted in the identification of a total of 3,341 entries for reports of studies published between 1993 and 2003. Note was taken of the large number of reports that were published through this initial search and consideration of the time limit available for this systematic review was discussed by the review team. It was decided that, within the limits of time and personnel available, it would not be possible to review 3,341 reports and a further limit on the search, through the reduction of the time span involved (1998-2003), was applied.

This resulted in a new total. From online resources and/or personal contact and other bibliographies (e.g. Project on the Effectiveness of the Induction Year), 475 reports were identified as broadly relevant to the review question. These were then appraised on the basis of abstract and/or title, using the exclusion criteria listed in section 2.3.1. Two hundred and fifty-six reports were excluded, leaving 219 reports that were considered appropriate for further scrutiny. These 219 reports were, therefore, ordered.

It was agreed that it was necessary to apply a time limit for the conclusion of document collection. One hundred and forty-six full-length reports were obtained and a further 73 were still on order. These 73 reports were not, therefore, keyworded.

Of the 146 reports that were available, the 51 reports that met the inclusion/exclusion criteria were keyworded and 95 were excluded. The remaining 51 reports were kept in an Endnote file and hard copies are also being stored.

3.2 Characteristics of the included studies (systematic map)

The map describes a set of 51 reports of 51 studies. Eighty five percent were found through electronic databases (listed in Appendix 2.2), 12% through personal contact, 3% through handsearches and 2% in a bibliographic citation. Eighty-two per cent were published studies, 17% were unpublished and 2% are in press.

All reports were published in English. These reports described 30 studies carried out in the USA, twelve in the UK, five from Canadian studies, two from Australia, and one each from New Zealand and Ireland.

Figure 3.1: Filtering of papers from searching to map to synthesis

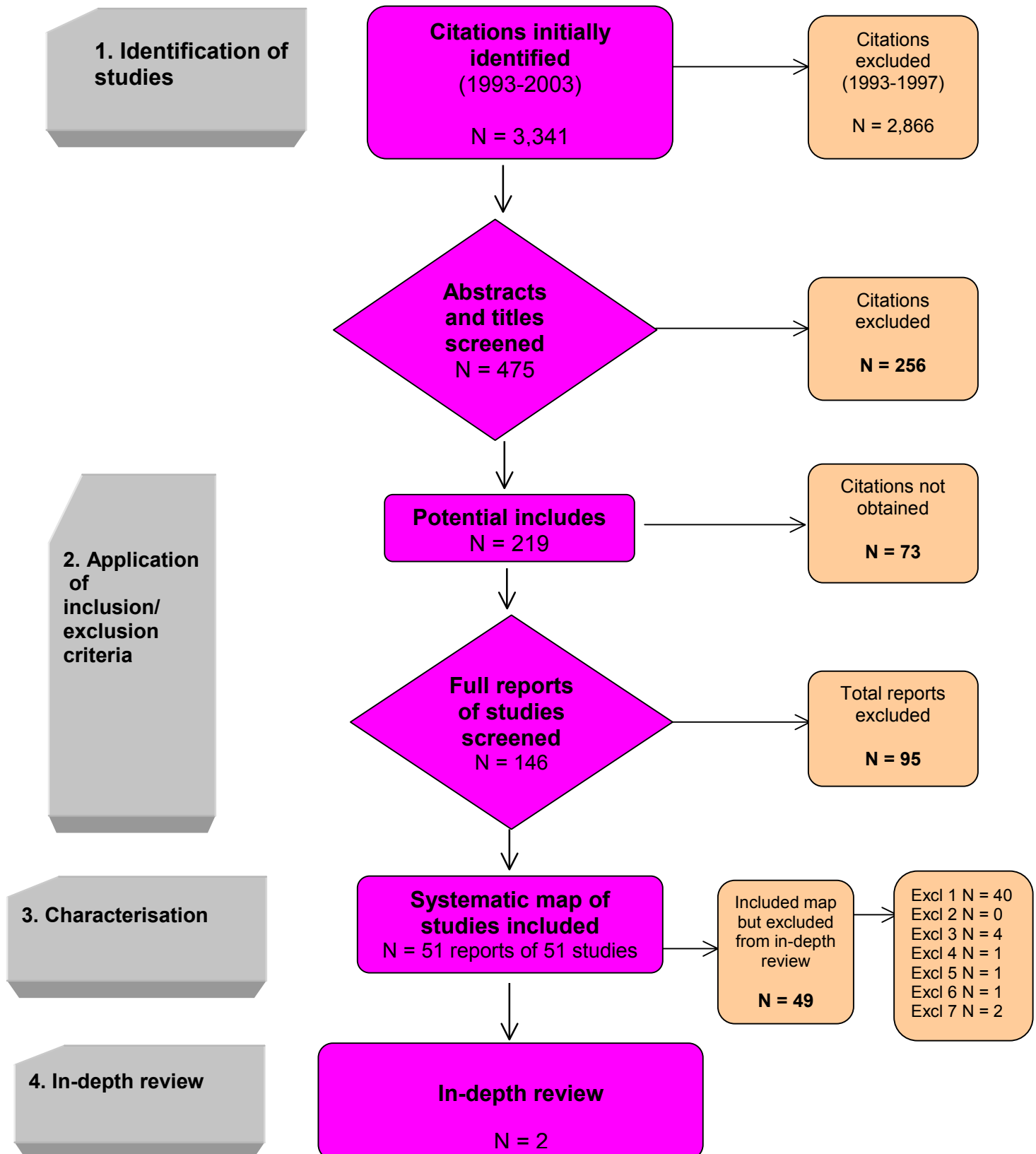
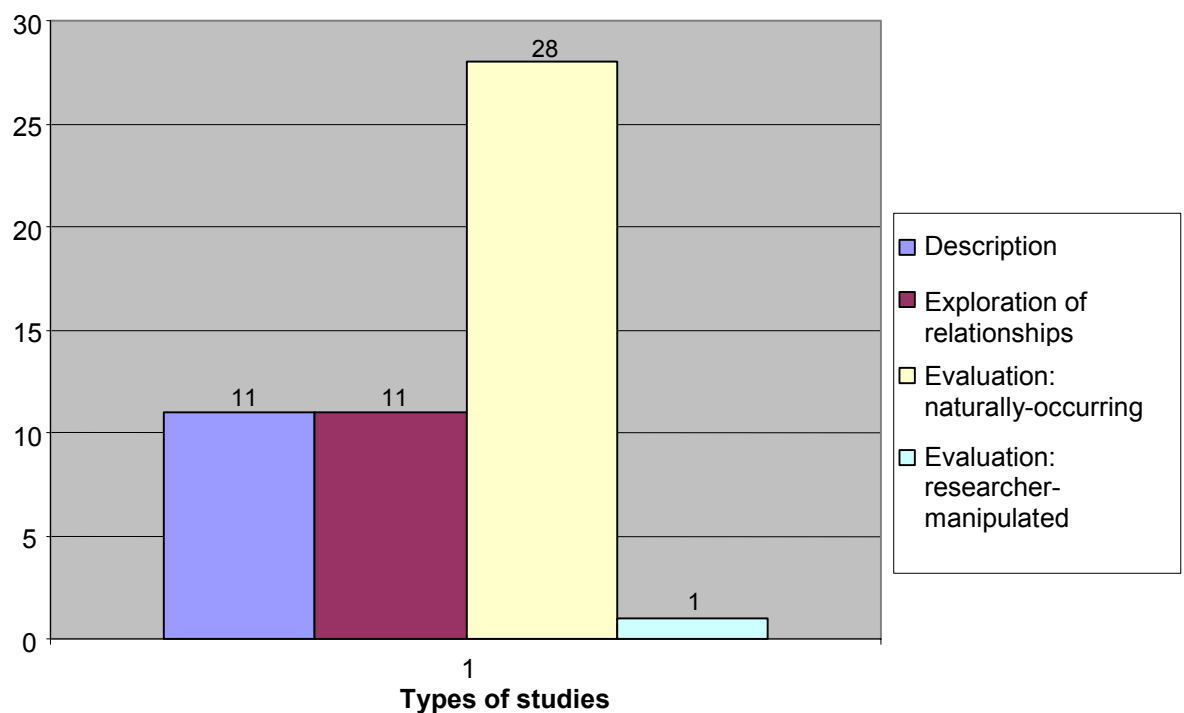


Table 3.1: Country of origin

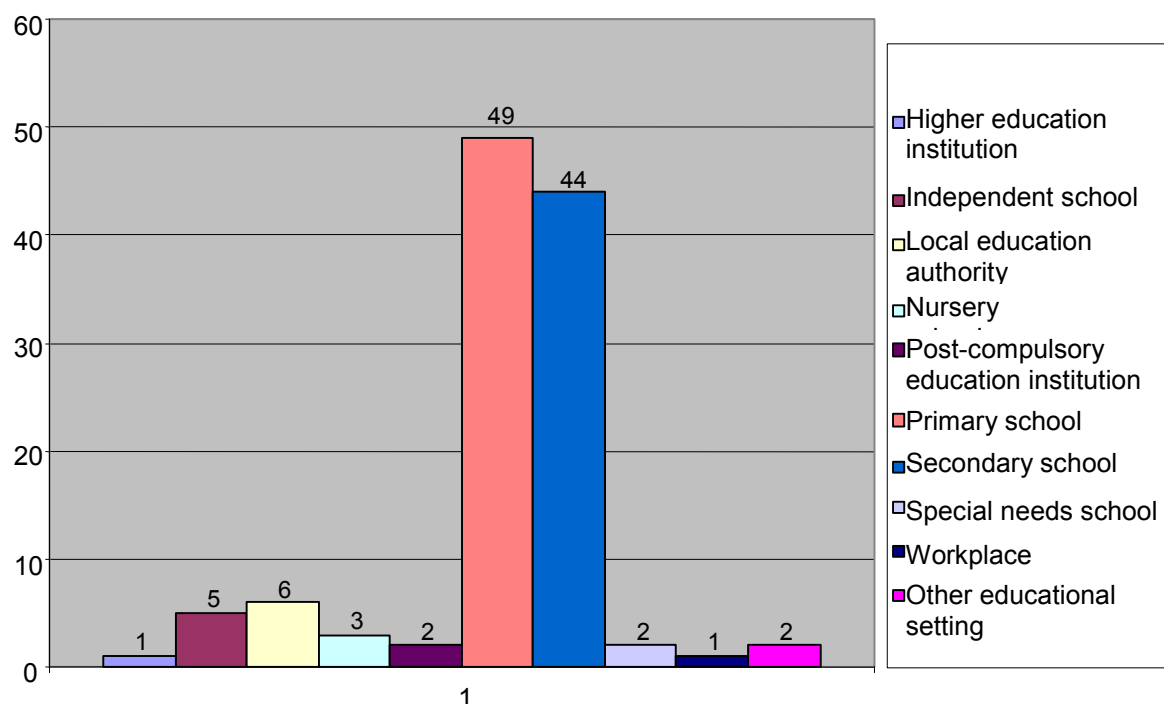
Country of origin	N = 51
USA	30
UK	12
Canada	5
Australia	2
New Zealand	1
Ireland	1

Figure 3.2: Types of studies (N = 51)

The types of studies that were keyworded included:

- naturally-occurring evaluations (28)
- researcher-manipulated evaluations (1)
- descriptions (11)
- exploration of relationships (11)

Figure 3.2 shows that the majority of studies used for this review were naturally-occurring evaluations, comprising 28 of the studies. Of the remaining categories, 11 were exploration of relationships type studies, 11 were descriptions and one researcher-manipulated evaluation study.

Figure 3.3: Educational settings (N = 51, not mutually exclusive codings)

The educational settings which featured in the 51 keyworded studies and described where induction practices took place included the following:

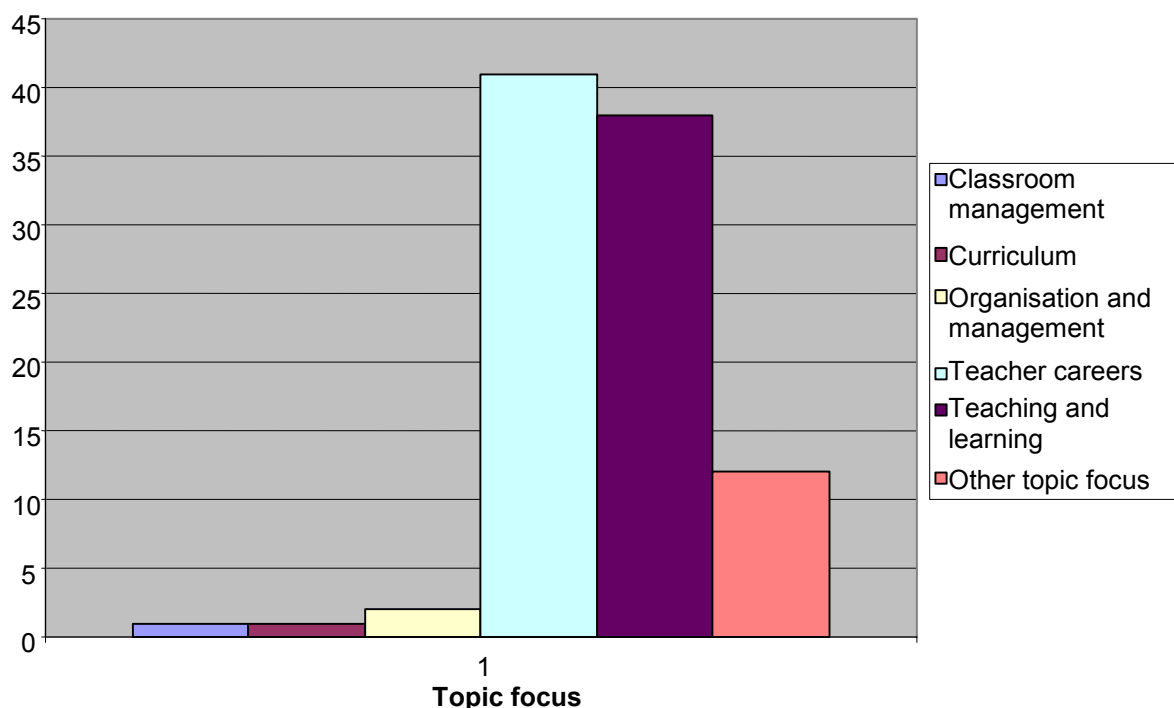
- primary schools (49)
- secondary schools (44)
- local education authorities (6)
- independent schools (5)
- higher education institutions (1)
- nursery schools (3)
- post-compulsory education institutes (2)
- special needs schools (2)
- other educational settings (2)
- workplaces (1)

(NB: Some of the studies presented research in more than one educational phase. This was because most of the studies examined stated that they covered research across the compulsory schooling phase, including both primary and secondary phases. Where this occurred, the review group decided to keyworded for both secondary and primary. These definitions, therefore, may have been double-counted. Similarly, if the study stated that it covered the early years or nursery phase, this was counted as primary.)

Forty-nine of the studies focused on the compulsory phase, early years and sixth-form college education. Studies included more than one coding to describe its focus and two of these (Angelle, 2002; Heilbron *et al.*, 2002) were keyworded with educational settings outside of the team's remit as well as within it. Other categories keyworded are listed in Figure 3.3. Of the four focus settings (early years, primary, secondary and sixth form), the overwhelming majority of studies reported on both

primary (49) and secondary education (44). Only three of the studies mentioned nursery or early years education although other types of educational institutions were identified in some of the studies. These included local education authorities (6), independent schools (5), higher education (1), post-compulsory education institutions (2), special needs schools (2), workplaces (1) and other educational settings (2).

Figure 3.4: General topic foci (N = 51, not mutually exclusive codings)

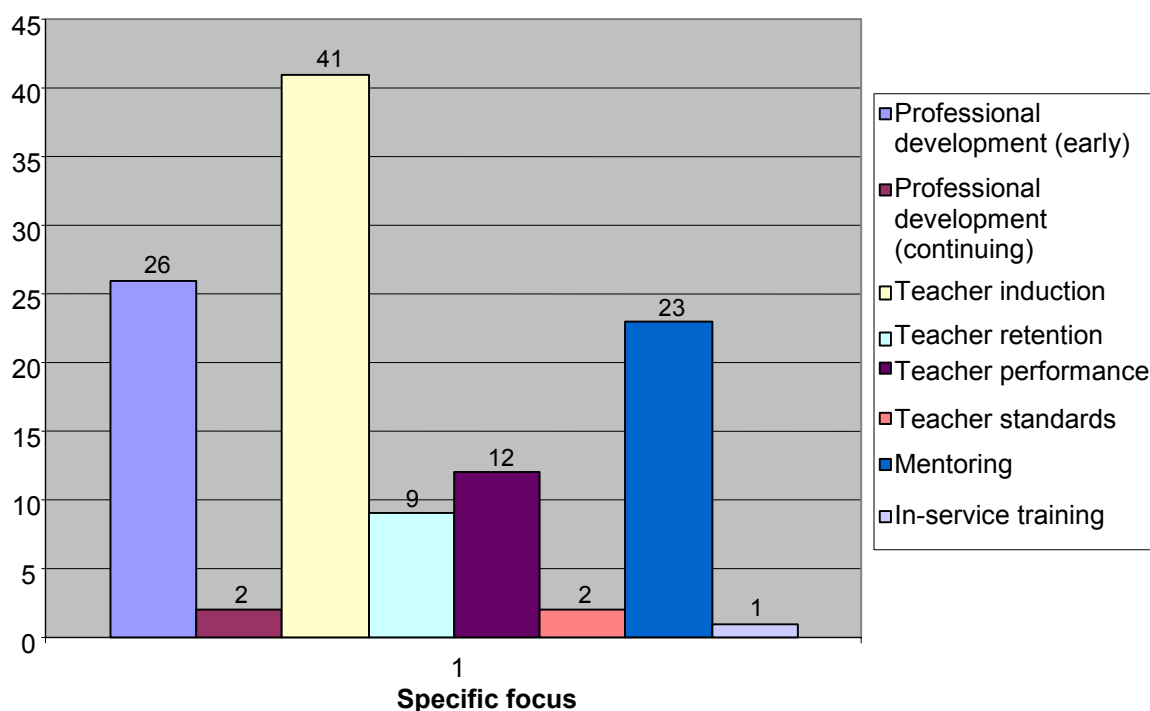


Topic foci included the following:

- teacher careers (41)
- teaching and learning (38)
- 'other topic focus' (12)
- organisation and management (2)
- classroom management (1)
- curriculum (1)

(NB: Some studies were grouped into more than one of the above categories. During the keywording, the review team agreed that the categories 'teacher careers' and 'teaching and learning' were not mutually exclusive; they could therefore be double-counted. This accounts, therefore, for the high numbers of studies keyworded using both categories in this review.)

Most of the studies in this review concentrated on teaching and learning, and teacher careers (41 and 38 respectively). Twelve of the studies were categorised as *other topics*. Thirteen of these fourteen *other topic* studies were also grouped in teacher careers, two of them in teaching and learning, and one in classroom management. The remaining studies showed coverage for organisation and management (2), and for classroom management (1) and curriculum (1).

Figure 3.5: Specific focus (N = 51, not mutually exclusive codings)

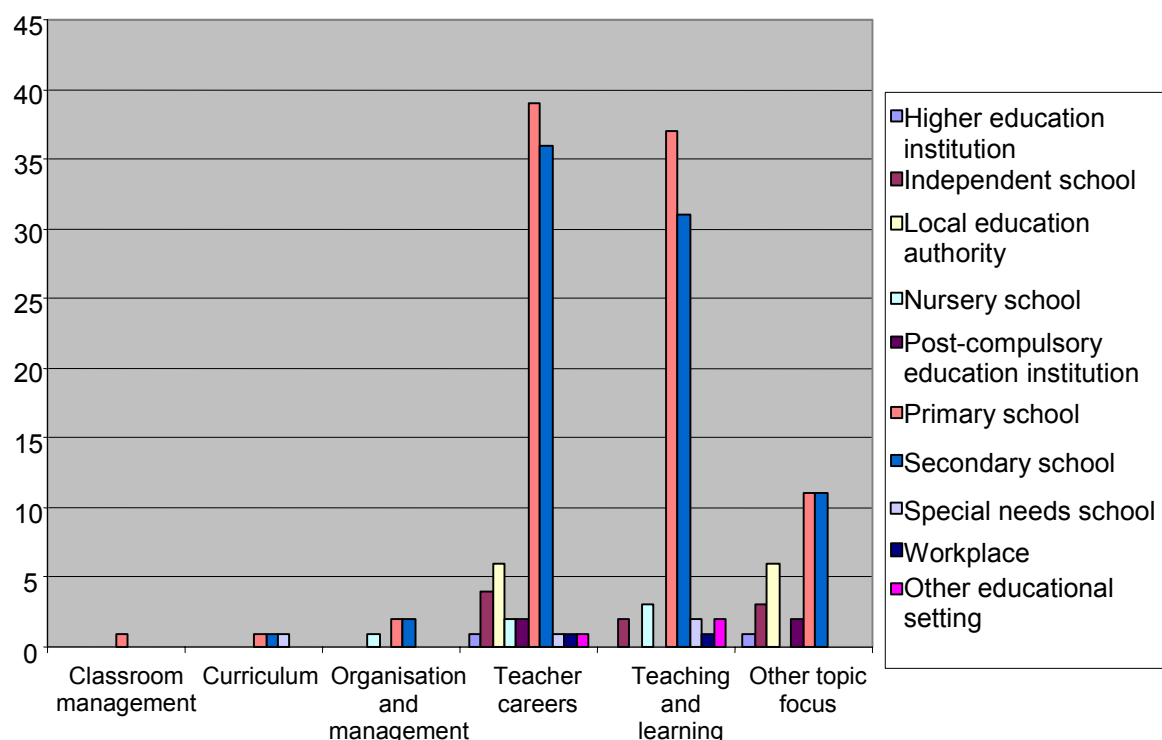
The specific study foci created for the Induction of NQTs review included:

- teacher induction (41)
- early professional development (26)
- mentoring (23)
- teacher performance (12)
- teacher retention (9)
- teacher standards (2)
- continuing professional development (2)
- in-service training (1)

(NB: Teacher induction and early professional development were double-counted, since studies researching early professional development may have covered induction. Similarly, studies often included research on mentoring as well as induction in the texts.)

Of the eight categories coded for the specific focus, teacher induction, with 41 studies, received the highest coverage (Figure 3.5). There were significantly fewer studies which focused on early professional development (26), but this outnumbered those which focused on mentoring (23 studies) and teacher performance (12 studies). Only nine of the 51 studies focused on teacher retention, and in-service training, teacher standards and professional development (continuing) received only two or less coverage each.

Figure 3.6: Educational settings and general topic foci (N = 51, not mutually exclusive codings on both variables)



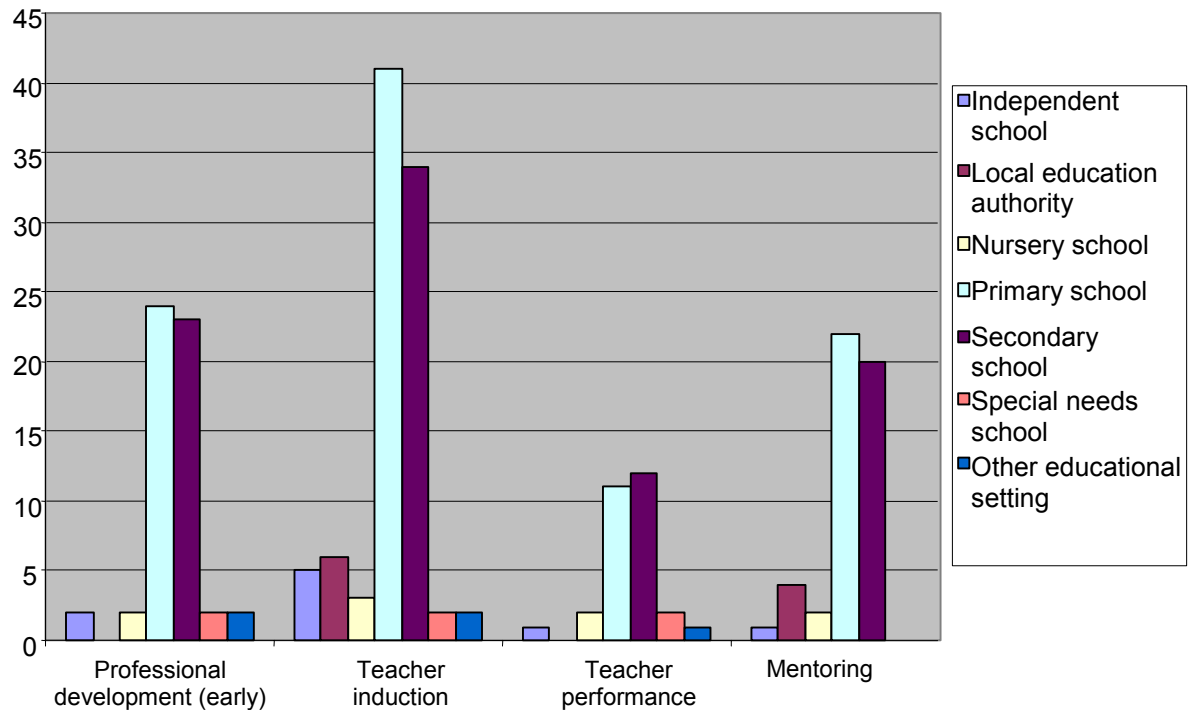
The EPPI-Centre core keywords (2002a) listed a total of 16 educational settings for reviewing studies in this research and, of these, 10 were relevant to the NQT review.

For the purposes of the NQT induction review, the team decided to use the following educational settings:

- nursery school
- primary school
- secondary school
- post-compulsory education institution
- higher education institute
- local government authority
- special needs school
- independent school
- workplace
- other educational setting

Using the EPPI-Reviewer cross-tabs facility, it was possible to find the relationship between educational settings and the topic foci for the 51 keyworded studies. The results of the cross-tabs presented higher numbers of studies focusing on primary and secondary schools' teacher induction than in any of the other educational settings. The overall picture, as seen in Figure 3.6, shows that there were significantly more studies researching teacher careers, and teaching and learning in primary and secondary schools for (39 and 37 respectively) than all other categories.

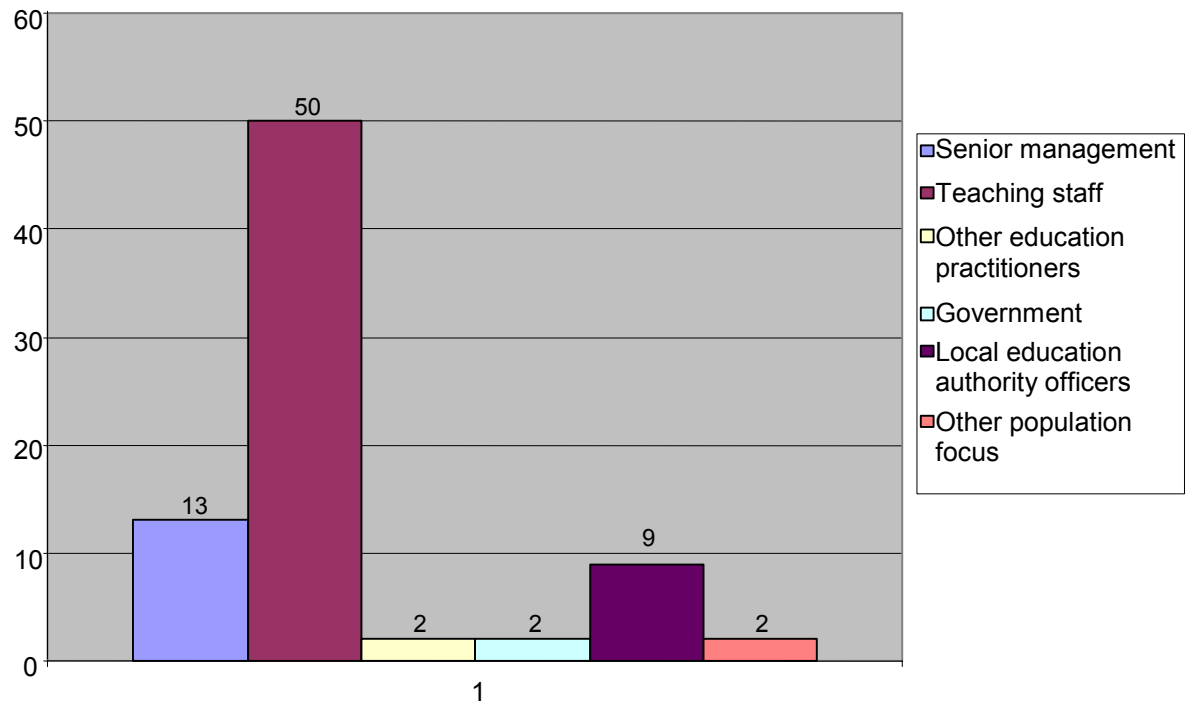
Figure 3.7: Educational settings and specific topic foci (N = 51, not mutually exclusive codings on both variables)



There are two sets of population foci: general and specific. General population focus refers to the EPPI-Centre core keywords (2002a). The specific population foci are listed above, four of which are represented in Figure 3.7. The population foci for this set were created by the NQT team for the TTA systematic review. This chart shows that most of the research focussed on primary and secondary school settings in teacher induction foci (41), second in early professional development studies (24), third in studies focussing on mentoring (22) and fourth in studies focussing on teacher performance (11).

(NB: These figures add up to more than 51 due to double-counting.)

Figure 3.8: General population focus (N = 51, not mutually exclusive codings)

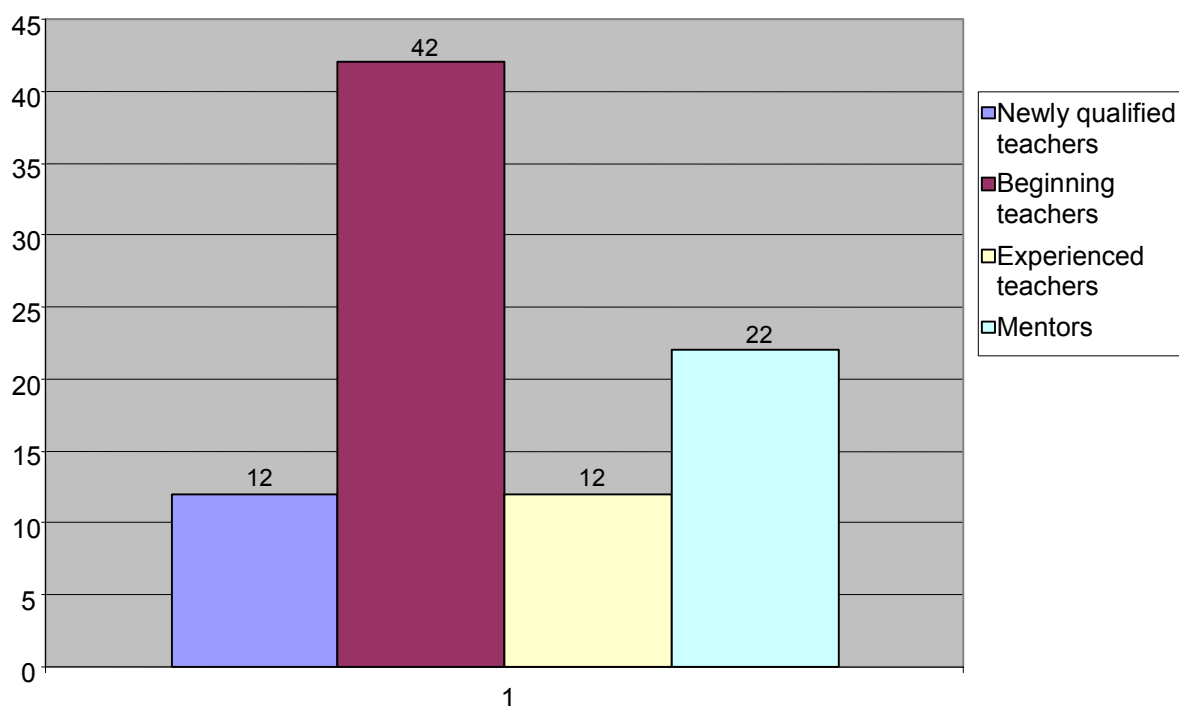


General population foci include the following:

- teaching staff (50)
- senior management (13)
- local education officers (9)
- government personnel (2)
- other education practitioners (2)
- other population foci (2)

(NB: Some of the studies were classed as having relevance to more than one of the above categories. For example, ‘teaching staff’, ‘senior management’ and ‘other education practitioners’ are not regarded as being mutually exclusive.)

Fifty studies focused on teaching staff, thirteen studies covered research on senior management, nine studies focused on local education authorities, and two each reported on government, other education practitioners and other population foci respectively.

Figure 3.9: Specific population focus (N = 51, not mutually excluded codings)

The induction of NQTs review specified the following four categories with which to code population studies:

- beginning teachers (42)
- mentors (22)
- NQTs (12)
- experienced teachers (12)

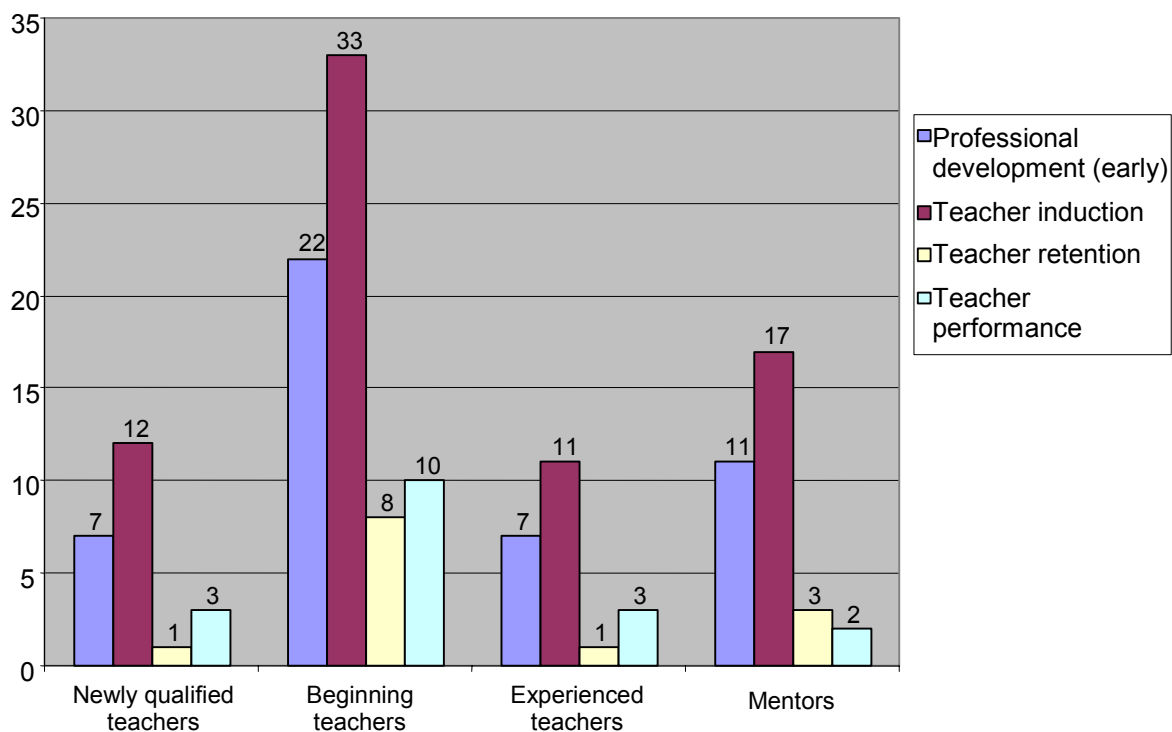
(NB: The specific population foci in some of the studies keyworded includes more than one population group; this is due to the use of different terms for the same population in the UK and USA, such as beginning teachers and NQTs.)

The specific populations which the studies addressed most frequently were beginning teachers and mentors, as shown in Figure 3.9. These categories were covered in 82% and 43% of the studies, respectively. To some extent, this reflects the preferred nomenclature of the studies that use 'beginning teachers', as used in the US, Canada, Australia and New Zealand, that refer to those in their first year of teaching. UK terminology for new teachers is usually 'NQTs'. Mentors refer to the primary support providers. Of the 42 studies on beginning teachers, 22 also included data on mentors, 12 included data on NQTs and experienced teachers.

There were two studies which described their population foci differently to the above list of school populations: Gratch (1998) used the term 'intern teachers' and Eberhard *et al.* (2000, p 40) described the target population as 'new teachers in South Texas with three or less years teaching experience'.

Specific focus and specific teacher population

Figure 3.10: Comparison between specific population foci and mentoring, teacher standards, teacher performance, teacher retention and teacher induction (N = 51). (Categories in this example are not mutually exclusive on both variables.)



The purpose of this chart is to highlight studies which had common features within the given specific populations that were studied.

Of all these categories, the population focus area which had the highest research coverage throughout was beginning teachers.

The chart shows that the 51 studies that focussed on teacher induction concentrated most on the teaching populations beginning teachers (33) and mentors (17), with fewer reports on newly qualified teachers (12) and experienced teachers (11). Studies on early professional development also focussed on beginning teachers 22 times in this review, 11 times on mentors, and seven times each for NQTs and experienced teachers. Studies on teacher performance were found to be highest again for beginning teachers (10), then for experienced teachers and NQTs (3 each) and lastly for mentors (2). The highest record for studies on retention was found in those for beginning teachers with eight studies.

3.3 Identifying and describing studies: quality assurance results

In identifying and describing studies, the project team employed a screening exercise based on the inclusion and exclusion criteria. The criteria were applied to 475 studies identified as having possible relevance to the review question. Where differences occurred between members of the team, following the explicit criteria of the protocol to identify relevant studies, these were reconciled by a review of the screening process undertaken by the project director.

Eight studies were identified through this review of the screening process as requiring a revision of their categorisation. It was found that there were inconsistencies in keywording. To address this weakness, three meetings were arranged in February and March 2003 to provide in-depth discussions until agreements were reached on how studies were included and excluded from the original selections. Similarly, keywording was tested for accuracy and agreement in conjunction with Dr Nicholas Houghton, the consultant at the EPPI-Centre.

Where differences occurred, these were reconciled at a subsequent meeting of the induction review team in early March. Amendments were made to address any discord. For example, it was pointed out by the consultant that, where keywording was being applied to indicate the type of study, the category 'other review' could not be used to identify a study that contains new empirical data, even where that sits alongside a comprehensive literature review. Once the data-extractions were done, the team met to examine the data for disagreement. Differences at this meeting were reconciled against established norms and appropriate amendments made.

4. IN-DEPTH REVIEW: RESULTS

4.1 Selecting studies for the in-depth review

The studies that were selected for in-depth review were based on the criteria listed in section 2.3.2 above. They were found to meet the inclusion criteria in that they exhibited greater relevance than all other studies of their type, addressing the research question components more frequently than all other studies at the time of the completion of this review. Both studies were descriptions; both involved local education authority input and higher education personnel or other governmental staff in the research; both studies used more than one venue and local district from which to collect data, providing a broader sample than other studies. Like the other studies that were keyworded, they described and assessed up-to-date new teacher induction programmes in more than one educational phase and provided valuable recommendations for future good practice. Of all the studies keyworded, these two studies represented the most comprehensive fit with the foci of the research question.

4.2 Comparing the studies selected for in-depth review with the total studies in the systematic map

Of the 51 studies in the map, 11 were classified as *descriptions* only. A further nine studies were excluded from the data-extraction as shown in Table 4.1.

Table 4.1: Studies excluded from the data-extraction process

Exclusion criteria	N	Authors
Lack of HE, LEA or other government involvement	4	Barrington (2000) Cuthbertson (2002) Gratch (1998) Schalock (2002)
Limited in breadth of induction programme (for music teachers only)	1	Yourn (2000)
Limited in research location (only one location in California)	1	Meyer (1998)
Limited in educational phase (primary phase)	2	Heaney (2001) Lewis (2000)
Not engaging with issues of teacher expertise, professional development, job satisfaction and retention	1	Henke (2001)

This left two studies, Youngs (2002) and Arends and Winitzky (1999), which met the inclusion criteria for the in-depth review.

4.3 Further details of studies included in the in-depth review

1. Youngs P (2002) <i>State and District Policy Related to Mentoring and New Teacher Induction in Connecticut</i>
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[Prepared for the National Commission on Teaching and America's Future, November 2002.

ERIC (number not given) EPPI Endnote no. 1324]

Aims and setting

This report described a study which was set in Connecticut during the two years 2000 and 2001. It took place after the high attrition rate of new teachers in the urban state schools had become a matter of concern. The study examined the application of Connecticut's Beginning Educator Support and Training (BEST) program in two of Connecticut's urban districts, Bristol and New Britain. The author reported on any consequential differences that occurred during the 2000-2001 school year and after the induction program (Youngs, 2002, p 4). Taking another factor into account, a high salary, the author also compared attrition rates of those involved in the program with the rates for attrition in other school districts in Connecticut that did not use the program or have the higher salary.

The report aimed to show the following:

- how two induction programs were assessed;
- what a valid induction program can do to improve new teacher expertise;
- how a high salary combined with a valid induction program can affect teacher retention.

BEST Program

The BEST program provides new teachers with mentoring and other support, including free in-service training courses relating to teaching methods and expertise. For their first year, new teachers work with mentors or other support members, one of which must be a BEST program trained supporter. Both the study researchers and the BEST program workers adopted existing district procedures for their assessments - senior school staff observations and the district Professional Performance Instrument (PPI) - to standardise the observation exercise.

Study method

The induction program involved taking new teachers from each participating district and allocating to them trained mentors for their first year of teaching. In the second year, the new teachers are asked to complete a subject specific portfolio.

At Bristol, school administrators (principals) observed and scored new teachers within the classroom, using the PPI, on the basis of competence in 'teaching and learning process, classroom management, classroom climate and professional/personal attributes'. Descriptions used for the assessment included descriptor terms such as 'distinguished, proficient, basic or unsatisfactory' (op. cit., p 28).

In New Britain, some school principals evaluated new teachers focusing on 'instructional delivery, classroom management and students assessment'. Others assessed progress based on student learning and self-assessment practices (op. cit., p 46). As well as this, new teachers were interviewed to find their views on their induction year and monthly meetings were held when feedback on BEST scoring was delivered (op. cit., p 53).

Results

Results and comparisons were made showing any differences from before and after the BEST program assessment.

Findings can be summarised as follows:

- In Bristol and New Britain, induction practices were combined with high teacher salaries to keep teacher attrition and migration at very low levels; teacher retention was much higher in these districts than in other districts serving students from similar socio-economic backgrounds.
- In Bristol and New Britain, the high quality of induction support, the district policy and commitment to mentor assignment, working conditions, professional development for second-year teachers, and strong instructional leadership among principals had consequences for the retention levels in these districts.
- In many schools in Bristol and New Britain, district policy relating to teacher evaluation interacted with effective principal leadership to influence new teachers' experiences positively.
- In Bristol, district policy in relation to mentors' work conditions - especially compensation and release time - appeared to affect the quality of support experienced by new teachers.
- Some districts in Connecticut did not compensate mentors, which tended to discourage experienced teachers from serving in this role, especially when salary supplements were available for serving in other roles, such as department chairs, athletic coaches and student club advisors. Mentors who were not paid seemed to have less incentive to maintain current knowledge of state teaching standards and portfolio requirements or to establish trusting relationships with mentees.

2. Arends RI, Winitzky N (1999) *Teacher Induction: Research and Examples of Contemporary Practice*

[Prepared for the Suncoast Academy for Teacher Induction, Largo, Florida.]

This report consists in a paper prepared for prepared for the Suncoast Academy for Teacher Induction, Pinellas County Schools, Largo, Florida. It is linked to a large-scale study on teacher induction and mentoring conducted by Richard Arends and colleagues in 1998. It is informed by previous review studies by Huling-Austin (1986, 1990, 1992), Darling-Hammond (1995) and Gold (1996); further informed by the joint US Department of Education, APEC Education Forum and Pelavin Research Institute Survey (Moskowitz and Stephens, 1996).

This study was conducted a number of years after the education reforms in the 1980s on teacher induction. There were concerns that some induction programs

were 'very meager and informal, other very thorough and formal' (Arends and Winitzky, 1999, p 5).

Aims and setting

The purpose of this research was to review and summarise research on existing beginning teacher induction programs; to identify a variety of existing induction programs; to highlight good practice; to make recommendations for program development and implementation for future use. LEAs were used as they are 'major stakeholders for how teachers are initiated and socialized into the schools where they will teach' (op. cit., p 33).

The paper researched induction programs in several US states to represent programs from 'different geographical regions of the country as well as different sizes of states or districts' (op. cit., p 33). The Ohio model was described to highlight a 'formalized' induction program. The Connecticut BEST program was selected as it 'emphasises the assessment aspect of induction' (op. cit., p 7). California's BTSA was selected because it emphasizes local autonomy and 'the assistance aspects of induction' (op. cit., p 7). Oklahoma was chosen as it is one of the oldest programs, in the Midwest, requires mentor teams and HE personnel involvement (op. cit., p 7). Individuals were asked to provide information about their own induction to identify their perceptions on best practice (op. cit., p 5).

Study method

The study firstly examined literature concerned with beginning teacher induction and gave examples of programs that are currently in use in the states already mentioned. Secondly, it looked at induction provision from several US LEAs and states in the US. It identified the existing best practices for both state and local districts, and highlighted the Columbus, Ohio (PAR) district-based induction program and the Connecticut state program (BEST) as fitting examples.

Finally, the document gives the following 10 recommendations for developments in future induction programmes:

1. clear aims
2. clear definitions for 'effective teaching'
3. understand about the process of learning to teach
4. monitor the process of learning to teach
5. monitor *how* induction is delivered
6. provide 'appropriate for experience' teaching assignments to new teachers
7. use mentoring to guide the new teachers
8. provide professional development to support induction
9. be aware of the value of socialisation in induction process
10. set an evaluation for the program

The study concludes with a set of criteria with which to assess an induction program in relation to the 10 recommendations above, and which help to make clear the importance of the roles of the state and the district induction programs. The paper adds a note of caution about the new interest in developing induction programs more systematically, stating that (i) induction is not being a panacea for all school shortcomings and (ii) stresses conservative use of mentors with no training.

The study operates with implicit research-based hypotheses: carefully constructed and managed induction programmes achieve their goals; induction mentors require

training; beginning teachers require a reduced workload. These lead to an implicit research question: does current research confirm these research-based hypotheses and do we have a better sense of the efficacy of induction programmes and of the components needed to ensure programme success?

The research operates with a number of explicitly stated variables. The authors aimed to study literature concerning induction programs, inductees perception of their induction, and quality induction programs in states and districts in the USA. They also operate with particular constructs: Beginning Teacher Concerns and Problems; Induction Programme Features and Outcomes; Trends in Teacher Induction.

A number of the findings and recommendations of the study as reported by the authors

General principles

There are indications that induction programmes would be best to address classroom management, instruction, stress and workload issues, time management and relationships with students, parents, colleagues and administrators. Additionally, new teachers should be allocated more time for preparation than experienced teachers, as well as having the support of both the experienced and the headteacher. The study emphasises the importance of a valuable headteacher and senior management input. The author asserts that quality induction improves instructional competence, effectiveness and promotes novices' sense of wellbeing.

Mentoring

The study emphasises the qualities of an effective mentor as the ability to provide emotional support, to instruct about curriculum and instruction, and to give insider information about workplace norms and procedures. The authors place importance on the training of mentors, stating that this results in higher mentor effectiveness. They add that the content of mentor training programmes should include adult development and learning, supervision and conferencing skills, and relationship and communication skills. They also state that released time and/or teaching load reduction for mentors and beginning teachers is critical as well as regularly scheduled meetings for mentors and beginning teachers within a formal, systematic programme are highly related to programme success.

They add that, although induction would improve the effectiveness of a new teacher to the profession, there is little evidence that induction improves short-term retention rates.

4.4 Synthesis of evidence

Table 4.2: Synthesis of evidence from Youngs (2002) and Arends and Winitzky (1999)

Study ID	Quality of study in own terms	Appropriateness of design for this review	Relevance of focus of study for this review	Overall weight of evidence
Youngs (2002)	Low	Low	High	Medium
Arends and Winitzky (1999)	Low	Low	High	Medium

Both studies contribute low weight of evidence in terms of their methodological quality and the appropriateness of their design for addressing the question of the review. Nevertheless, they are high in terms of their focus. Overall, both studies contribute medium weight of evidence for the review and, therefore, the conclusions from the synthesis must be tentative. A synthesis of the findings of these two studies suggests that, while there remains more to be learned about induction programmes and how best to ensure they impact on new teachers' expertise, professional development, job satisfaction and retention rates, the contours of our knowledge base can be sketched out as follows:

1. It is important to obtain clarity at the level of policy and transparency at the level of practice about the goals and purposes of induction programmes and also about standards, accountability and who does what.
2. It is important to pay assiduous attention to the role and delivery system developed for implementing induction programmes, including the relationship between central and local government, and between these two entities and other agencies, such as university departments of education, teacher councils, association and unions, and, finally, between all these and schools.
3. It is similarly important to pay careful attention to providing clear definitions, terms of engagement (i.e. regulations, requirements, expectations, codes of conduct, reliable assessment procedures, due process of appeal, etc.) and guidance in relation to the arrangements for induction.
4. New teachers benefit from induction in proportion to the degree that they receive reduced timetables/lesson loads, balanced class assignments with fewer difficult/challenging classes, scheduled time for collaborative planning and target setting, support from mentors who have been prepared for such a role, and opportunities to participate fully in induction-related activities, especially structured observation of lessons.
5. The mentor role is critical for successful induction programmes.
6. An effective training and professional development component to support the induction programme adds value in terms of teacher performance and sustainable retention.
7. Effective evaluation of induction programmes must engage central and local government level input as well as school-based experience if it is to result in the continuing improvement and increased capacity of delivery systems and strategies.
8. Sound induction practices when combined with high teacher salaries, keep teacher attrition and migration at very low levels; teacher retention was much higher in districts exhibiting this combination than in other districts serving students from similar socio-economic backgrounds.
9. A well focused induction policy adapted to the local situation, high quality of induction support and commitment to mentoring, good working conditions, professional development for new teachers, and strong instructional leadership among heads/principals have positive consequences for retention levels.

10. In schools where central/local government/agency policy relating to teacher evaluation/appraisal interacted with effective leadership by heads/principals, this positively influenced new teachers' experiences.
11. Constructive policy in relation to mentors' work conditions - especially incentive-compensation and release time - appears to affect positively the quality of support experienced by new teachers. Institutions that do not give mentors incentive-compensation run the risk of discouraging experienced teachers from serving in this role, especially when salary supplements are available for serving in other roles, and provide less incentive to maintain current knowledge of teaching standards and portfolio requirements or to establish trusting relationships with mentees.

4.5 In-depth review: quality assurance results

Agreement on data-extraction and quality appraisal was extensive and involved a member of the EPPI team as guide to protocol. The most disagreement occurred over the questions of the weighting of the evidence from the two studies which were data-extracted. Through the means of moderation described earlier, disagreement over evidence specificity and relevance to the review question was overcome with relative ease with the application of criteria and guidelines amplified by the project consultant. The reconciliation process was therefore satisfactorily achieved in relation to both the detailed specifics of the in-depth review and the quality assessment of the two studies concerned.

4.6 Nature of actual involvement of users in the review and its impact

User perspectives were incorporated into the in-depth review through the involvement of a senior induction researcher (Dr Michael Totterdell), experienced induction co-ordinator (Sara Bubb) and a school induction mentor, Karen Hanrahan, who was brought in to advise the team on the implementation of the review. As well as offering advice, she took an active involvement in the review of one of the studies (Youngs, 2002). User perspectives were also communicated through Sara Bubb to the rest of the members of the review team.

5. FINDINGS AND IMPLICATIONS

5.1 Summary of principal findings

5.1.1 Identification of studies

Appendix 2.2 contains full details of searching. The bibliographic details of all studies identified through database searches and the potentially relevant studies found by hand, website and bibliography searching and through personal contact were entered into a series of EndNote bibliographic databases created for the review. A hierarchical system of sourcing was established, with database searches logged in the order presented below, followed by the results of handsearching, bibliographies, websites and personal contacts. The citations found for each search of a new source were entered onto a separate database, after first being checked against sets already collected, and duplicates were removed.

5.1.2 Mapping of all included studies

The review identified a total of 3,341 reports that related broadly to the impact of induction on NQTs, of which 2,866 that were published between 1993 and 1997, and 475 were published between 1998 and 2003. Two hundred and nineteen of these studies met the inclusion criteria for further scrutiny. After excluding studies on the basis of date, relevance of topic, relevance of educational phase, relevance of educational setting, study type and geography, 51 studies were keyworded.

In terms of categorisation, the following summarises the main findings in terms of mapping the research activity on the topic:

- Most of the studies found originated from the USA, although a significant minority came from research in the UK, Canada, Australia and New Zealand.
- The majority of studies were found on the ERIC database.
- Most of the studies were naturally-occurring evaluations.
- The most common general focus was Teacher Careers.
- The most common specific focus was Teacher Induction.
- The greatest general population focus was Teaching Staff.
- The majority of studies dealt with the research relating to beginning teachers.
- Mentors and mentoring research was the second highest category.

5.1.3 Nature of studies selected for the in-depth review

The Induction Review Group concluded with identifying two studies which met the inclusion criteria for the review question:

How does current research characterise the impact of induction programmes on new teachers in relation to enhancing teaching expertise, professional development, job satisfaction and retention rates?

The following two studies are both descriptive research studies; they describe research carried out using up-to-date induction programmes; they describe programmes of induction provided by LEA or government initiatives; they engage with the issues of teacher expertise, professional development, job satisfaction, or retention; they describe research carried out in more than one location and/or in more than one state of North America:

Arends RI and Winitzky N (1999) *Beginning Teacher Induction: Research and Examples of Contemporary Practice*. Largo, Florida: Suncoast Academy for Teacher Induction, Pinellas County Schools

Youngs P (2002) *State and District Policy related to Mentoring and New Teacher Induction*. New York: National Commission on Teaching and America's Future.

5.1.4 Synthesis of findings from studies in the in-depth review

A synthesis of the findings of these two studies suggests that, while there remains more to be learned about induction programmes and how best to ensure they impact on new teachers' expertise, professional development, job satisfaction and retention rates, the evidence is sufficient to allow the contours of our knowledge base to be sketched out around the following loci. However, it must be stated that the evidence presented in these two studies is in summary form presenting no sampling frame, examples of original data (although an indication where the data may be viewed) or attempts to validate what is put forward for scrutiny. On these bases, the study conclusions must be treated with caution. The main propositions of the studies are as follows:

1. The need for clarity about the purposes of induction programmes in relation to policy and transparency about the goals of induction programmes in relation to practice is vital for achieving their successful implementation and appropriate accountability.
2. To get clarity around purposes and goals and to work out the implications of that takes time and therefore develop effective induction programmes based on sound research, high standards of performance and ethical conduct requires a lengthy process of piloting, evaluating and refining induction programmes.
3. Induction delivery systems are complex and need to combine measures that focus on new teachers, experienced teachers who provide them with support and structures that provide appropriate circumstances for successfully moving from novice to expert teacher status.
4. Induction requires appropriate circumstances: new teachers need to be given reduced teaching assignments and structured opportunities for collaborative planning, goal-setting and review with mentors; similarly, mentors require selection, preparation, release time and incentives for helping new teachers.
5. Induction programmes work best when an effective training and professional development component is provided to support all role groups – new teachers, their mentors and principals.

6. Good induction programmes when combined with an attractive pay and conditions package can make a measurable difference in improving the short-term retention of teachers.
7. Political and financial support is essential at all levels and must translate into realistic resources, if the propitious conditions for induction are to be achieved.
8. Trends in teacher induction are discernable and the most clear of these is that for extending support for new teacher and their assessment beyond the first year of teaching and to start thinking about the early professional development processes that include the first three years of teaching or the first five years inclusive of initial training with certification registered and/or chartered status being part of this process.

While this synthesis is reliable and valid, it operates at a level of generality that can at best inform local programmes. There is little empirical evidence to suggest that there is a definitive model for induction. Rather the precepts of induction need to be interpreted and adapted to local circumstances with flexibility, sensitivity to context and imagination. However much central government provides frameworks in terms of legislation, guidance and resource, it is important to recognise that best practice invariably emerges when the primary responsibility for the design and implementation of induction programmes rests with local authorities, schools and the teaching profession at large.

5.2 Strengths and limitations of this systematic review

The strength of the review can be found in the mapping of the 51 studies. Taking into account that counting and coding was not mutually exclusive (i.e. some categories were coded twice for one study), the map illustrated that the source of the majority of the studies was electronic databases (85% on ERIC). The most ubiquitous study types in this map were evaluations of naturally-occurring interventions. 'Teacher careers' made up 83% of the general foci, 'teacher induction' made up 83% of the specific foci, 98% of the general population focus was 'teaching staff', and 81% of all the studies dealt with the research relating to 'beginning teachers'. It also found that out of these 51 studies, mentors and mentoring were the second highest categories to be researched.

Given that both studies chosen for data-extraction, Youngs (2002) and Arends and Winitzky (1999), were descriptive in nature and taking account of all quality assessment issues, both studies exhibit medium trustworthiness in relation to answering the new research question, allowing for the fact of semantic differences between the US and the UK. Although the studies were medium in weight of evidence, this is not to say that the systematic reviewing was weak; on the contrary, it highlights the need for studies to become more transparent in their presentation of data. Indeed, a strength of the review is the identification of a lack of sound research to address the review question.

The main weakness in this review lay in the lack of available time, resulting in the examination of studies only as far back as 1998. More time is needed to cover the field comprehensively and to re-visit the findings of relevant research for its full

implications to the review's research question. It is perhaps indicative of a shortcoming in the corpus of research on induction that in this review:

- few studies reported specifically on the impact of induction on teacher retention;
- few of the studies concentrated on any particular curricular area (e.g. English, maths or science) and their links with teacher induction;
- only one study focused on new teacher induction *and* classroom management or in-service training;
- only two studies focused on new teacher induction *and* teacher standards or continuing professional development;
- very few induction studies were done in early years education.

5.3 Implications

As far as the in-depth review goes, results must be viewed with caution. However, the studies highlight a growing consensus around the ingredients for successful induction programmes and claim that induction improves teaching effectiveness and promotes new teachers' sense of wellbeing. They also claim that induction improves short-term retention and the evidence base for this is undoubtedly becoming stronger. The two studies reviewed in-depth overlap in their consideration of a particular induction programme - Connecticut's Beginning Educator Support and Training Program (BEST). The aggregate and cumulative nature of the studies together with the data-extraction exercise provides some basis for accepting their findings and has a bearing on the main research question adopted for this systematic review.

5.3.1 Policy

In terms of policy, a multi-faceted set of recommendations emerge clustered around various levels of agencies and other organisations who have direct responsibility for assuring the quality of teachers entering the profession. These have to do with three categories of policy engagement:

- clarity of purpose, programme design and specification which are symbiotically related to a point of view or perspective on the role of teachers and the process of learning to teach;
- defining the categories whereby conceptions of induction are prescribed by a set of regulations, standards and protocols for ensuring a high quality and sustainable teaching force supported by exemplification materials suitable for adaptation to local practice;
- translating political commitment into financial resources that can be deployed cost effectively and efficiently, while devolving budgetary, management and quality responsibility to allow flexibility and diversity, while demanding accountability.

The three points above are summary statements from the two studies reviewed in depth. Nevertheless, the reviewers advise users of the need to bear in mind the weaknesses of the evidence in the two studies used for this review.

5.3.2 Practice

The two documents presented practical suggestions for senior management, teacher mentors and inductors regarding new teachers' professional support and training, and, equally importantly, support to avoid attrition. The authors' suggestions included the following:

1. Inductees should be relieved of the most challenging teaching work and given time to attend courses.
2. Trained mentors were considered to be good agents for aiding new teachers through their first, and maybe subsequent, years of teaching.
3. A sensitivity of the value of less formal as well as formal procedures in the induction process should be engendered.
4. Induction programs should be evaluated over the long term, to capture information on teacher performance, retention and morale of new teachers.
5. The authors state the current situation with the US teacher population, the advantages of having smaller classes, and the need for continuing professional development after year 1. They add that work overload will not be eased through induction programs.
6. The authors also commented on the effect that better pay had on retention rates.

5.3.3 Research

Research continues to be needed into induction for, although there is a fair amount, as Humphrey and his colleagues point out, 'it does not allow us to map specific outcomes to specific programme models or components or directly to assess impacts on students' (Humphrey *et al.*, 2000, p 121). Particular recommendations that can be made in a fairly robust fashion relate to the content and type of future research. From an ideal perspective, one lesson to be learned is that, if research-based evidence is deemed important for the policy cycle, then piloting new initiatives is vital to allow for randomised controlled trials.

The following were identified as areas in which research needs to be carried out:

1. Mentor training
2. The effect of increased pay on retention rates
3. The affect of the roles played by principal leadership, senior advisors and mentors on the quality of new teacher induction
4. The affect of the district induction policy on attrition rates

Once again, it is important to bear in mind that the recommendations are valid in themselves but that the review judgement was medium for overall weight of evidence for both studies and the conclusions of the findings are wanting in further proofs.

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Rustique-Forrester E (1995) *Raising Professional Standards in Cincinnati: A Case Study of Capital Deed District-Wide School Reform through the Professional Development of Teachers*. New York, NY, USA: National Commission on Teaching and America's Future.

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Scott NH (2001) *Mentoring New Teachers: A Report on the 2001 Beginning Teacher Induction Program in New Brunswick*. Saint John, Canada: New Brunswick University.

Sebba J (1993) Government and research. Minuted notes of presentation to the Universities Council for the Education of Teachers (UCET) Research Committee. Institute of Education, University of London: January 23.

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Tasmanian Educational Leadership Institute (2002) *An Ethic of Care: Effective Programmes for Beginning Teachers*. Canberra, Australia: Commonwealth Department of Education, Science and Training.

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Totterdell M (2002b) Induction and the import of 'teacher perspectives': toward reconceptualising the early professional formation and development of Newly Qualified Teachers. Research paper presented during the symposium 'The induction period for newly qualified teachers: practice and experience in schools' at the Annual Conference of the British Educational Research Association. University of Exeter: September 12-14.

Totterdell M, Jones C, Bubb S, Heilbronn R (2002b) The induction of newly qualified teachers - policy into practice. Research paper presented at the American Educational Research Association Annual Conference. New Orleans, LA, USA: April 24-28.

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TTA (2002) *TTA Induction CD-Rom*. London: TTA.

TTA (2003a) *Career Entry and Development Profile (CEDP)*. London: TTA.

TTA (2003b) *New Standards for Induction*. London: TTA.

Tickle L (2000) *Teacher Induction: The Way Ahead*. Buckingham: Open University Press.

Villani S (2002) *Mentoring Programs for New Teachers: Models of Induction and Support*. Thousand Oaks, CA, USA: Corwin Press.

APPENDIX 1.1: Advisory Group Membership

Kevan Bleach, University of Wolverhampton

John Carr, Teacher Training Agency

Les Tickle, University of East Anglia

APPENDIX 2.1: Inclusion and exclusion criteria

Inclusion criteria

- To have been published between 1998-2003
- To have relevance to the research question
- To show empirical data
- Their focus to include early years, primary, secondary or sixth form college phases
- To originate from the United Kingdom, the United States of America, Australia, Canada and New Zealand where the dominant language and education systems are similar
- Primary research studies

Exclusion criteria

- Published before 1998
- Insufficiently relevant to the research question
- Not presenting empirical data
- The main focus FE, HE or community colleges
- From countries not geographically relevant to this review
- Reviews of past studies

APPENDIX 2.2: Search strategy for electronic databases

Databases searched

- Educational Resources Information Center (ERIC)
- British Education Index (BEI)
- Institute of Education (IOE) Catalogue
- British Library Electronic Table of Contents (ZETOC)
- Current Educational Research in the UK (CERUK)
- Educational Research in Scotland Database (ERSDAT)
- British Educational Research Association (BERA)
- American Educational Research Association (AERA)

Table 2.2.1: ERIC

Keyword	1993-2002	1998-2002
Teacher induction	117	26
Beginning teachers	2,315	55
Newly qualified teachers	8	6
Impact and induction	0	0
Job satisfaction	486	79
Induction and professional development	3	4
Induction and retention	4	3
Induction and job satisfaction	0	0
Induction and teacher expertise	0	0
Total	2,933	173

Table 2.2.2: BEI

Keyword	1993-2002	1998-2002
Teacher induction	7	5
Beginning teachers	31	12
Newly qualified teachers	28	17
Impact and induction	0	0
Job satisfaction	0	17
Induction and professional development	3	2
Induction and retention	0	0
Induction and job satisfaction	37	0
Induction and teacher expertise	0	0
Total	106	53

Table 2.2.3: ERSDAT

Keyword	1998-2002	1993-2002
Teacher induction		0
Beginning teachers		4
Newly qualified teachers		2
Impact and induction		0
Job satisfaction		3
Induction and professional development		0
Induction and retention		0
Induction and job satisfaction		0
Induction and teacher expertise		0
Total		9

Table 2.2.4: BERA and AERA

Keyword	BERA 1993-2002	AERA
Teacher induction	9	Uses ERIC as its search engine
Beginning teachers	7	
Newly qualified teachers	6	
Impact and induction	0	
Job satisfaction	0	
Induction and professional development	0	
Induction and retention	0	
Induction and job satisfaction	0	
Induction and teacher expertise	0	
Total	22	

NB: Keywords are not mutually exclusive.

APPENDIX 2.3: Journals handsearched

Asia-Pacific Journal of Teacher Education

European Journal of Teacher Education

Institute of Education Viewpoint

Journal of In-Service Education

Journal of Education for Teaching

Mentoring and Tutoring

Professional Development Today

Research in Education

Teaching and Change

Teaching and Teacher Education

APPENDIX 3.1: Studies not available for processing by the time limit

Abel J (2003) Review of DL Rogers and LB Babinski (eds) (2002) *From Isolation to Conversation: Supporting New Teachers' Development*. Albany, NY, USA: State University of New York Press. *Teachers College Record* **105**: 683-685.

Achinstein B, Barrett A (2003) (Re)Framing classroom contexts: how new teachers and mentors view diverse learners and challenges of practice. Research paper presented at the American Educational Research Association Annual Conference Chicago, IL, USA: April 21-25.

Baills L, Bell S, Greensill B, Wilcox L (2002) Bridging the gap between beginning teachers and isolated/rural communities. *Education in Rural Australia* **12**: 55-62.

Barrett J, Jones G, Mooney E, Thornton C, Cady J, Guinee P, Olson J (2002) Working with novice teachers: challenges for professional development. *Mathematics Teacher Education and Development* **4**: 15-27.

Black S (2001) A lifeboat for new teachers. *American School Board Journal* **188**: 46-48.

Bobek BL (2002) Teacher resiliency: a key to career longevity. *Clearing House* **75**: 202.

Boreen J, Niday D (2000) Breaking through the isolation: mentoring beginning teachers'. *Journal of Adolescent and Adult Literacy* **44**: 152-163.

Boss S (2001) Building a teacher's 'repertoire' takes time, training. *Northwest Education* **7**: 10-11.

Boss S (2001) Facing the future. *Northwest Education* **7**: 2-9, 41.

Boyer L, Gillespie P (2000) Keeping the committed: the importance of induction and support programs for new special educators. *Teaching Exceptional Children* **33**: 10-15.

Breidenstein A (2002) Researching teaching, researching self: qualitative research and beginning teacher development. *Clearing House* **75**: 314-318.

Canniff JG, Shank MJ (2003) If you do what you always did, you get what you always got: Portland SST transforming school cultures through a seamless continuum of teacher professional development. Research paper presented at the AERA Annual Conference. Chicago, IL, USA: April 21-25.

Close E, Ramsey K (2000) Mentoring at the middle level. Editorial. *English Journal* **89**: 121-124.

Conway CM (2003) Meeting the induction needs of beginning music teachers: What can policy-makers and program designers do? Research paper presented at the AERA Annual Conference Chicago, IL, USA: April 21-25.

Cook LS, Smagorinsky P, Fry PG, Konopak B, Moore C (2002) Problems in developing a constructivist approach to teaching: one teacher's transition from teacher preparation to teaching. *Elementary School Journal* **102**: 389-413.

Danielson L (2002) Developing and retaining quality classroom teachers through mentoring. *Clearing House* **75**: 183-85.

David T (2000) Programs in practice. Teacher mentoring benefits all around. *Kappa Delta Pi Record* **36**: 134-136.

Davis OL Jr (2001) A view of authentic mentorship. Editorial. *Journal of Curriculum and Supervision* **17**: 1-4.

Dever MT, Johnson FF, Hobbs E (2000) A qualitative analysis of an intensive Mentor-Apprentice Collaboration: MAC. *Journal of Research and Development in Education* **33**: 241-256.

Diamond KE (2001) Supporting early childhood teachers: a reflection on the Kentucky Teacher Internship Program. *Topics in Early Childhood Special Education* **21**: 150-151.

Easley J II (2000) Teacher attrition and staff development for retention. ERIC document number ED446054.

Easterbrooks SR, Harper C, Owens L, Nichols T (2000) Preventing returns on teacher warranties and guaranties. *Teacher Educator* **35**: 47-63.

Ferren A, Gaff JG, Clayton-Pedersen A (2002) Will reforms survive? Strategies for sustaining preparing future faculty programs. *Liberal Education* **88**: 14-21.

French K, Grumelart C (2002) Beginning teaching. *English in Australia* **133**: 55-57.

Gaff JG (2002) The disconnect: graduate education and faculty realities: a review of recent research. *Liberal Education* **88**: 6-13.

Gustafson B, Guilbert S, MacDonald D (2002) Beginning elementary science teachers: developing professional knowledge during a limited mentoring experience. *Research in Science Education* **32**: 281-302.

Haack P, Smith MV (2000) Mentoring new music teachers. *Music Educators Journal* **87**: 23-27.

Heilbronn C, Jones C, Bubb S, Totterdell M (2002) School-based induction tutors: a challenging role. *School Leadership and Management* **22**: 371-388.

Henderson-Sparks JC (2003) Survival, challenges and retention: four years of induction experiences of Beginning Teachers and their mentors. Research paper presented at the AERA Annual Conference. Chicago, IL, USA: April 21-25.

Hertzog HS (2002) 'When, how, and who do I ask for help?' Novices' perceptions of problems and assistance. *Teacher Education Quarterly* **29**: 25-41.

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Jones M (2002) Qualified to become good teachers: a case study of ten newly qualified teachers during their year of induction. *Journal of In-service Education* **28**: 509-526.

Kauffman D, Moore-Johnson S, Kardos SM, Liu E, Peske H G (2002) 'Lost at Sea': new teachers' experiences with curriculum and assessment. *Teachers College Record* **104**: 273-300.

Keiffer-Barone S, Hendricks-Lee M, Soled SW (2000) Teacher education in the 21st century: lessons from intern attrition in an urban professional development school. Paper presented at the annual meeting of the Association of Teacher Educators. Orlando, FL, USA: February 12-16.

Kirtman L (2003) Review of DH Cattani (2002) *A Classroom of Her Own: How New Teachers Develop Instructional, Professional and Cultural Competence*. Thousand Oaks, CA: Corwin Press. *Teachers College Record* **105**: 674-677.

Lankford H, Loeb S, Wyckoff J (2002) Teacher sorting and the plight of urban schools: a descriptive analysis. *Educational Evaluation and Policy Analysis* **24**: 37-62.

Levesque M, Gervais C (2000) L'insertion professionnelle: une étape à réussir dans le processus de professionnalisation de l'enseignement (Professional induction: a stage to succeed in during the process of professionalizing teaching). [French] *Education Canada* **40**: 12-15, 24.

Lloyd SR, Wood A, Moreno G (2000) What's a mentor to do? *Teaching Exceptional Children* **33**: 38-42.

McCreight C (2000) Teacher attrition, shortage and strategies for teacher retention. ERIC document number ED444986.

McKenna G (2000/01) Reflections on how to be mentorable. *Rural Educator* **22**: 11-13.

Mahlios MC (2002) Teacher role formation. *Action in Teacher Education* **24**: 9-21.

Martin LA, Chiodo JJ, Chang L (2001) First year teachers looking back after three years. *Action in Teacher Education* **23**: 55-63.

Mastrilli T, Sardo-Brown D, Hinson S (2002) Novice teachers' case dilemmas: surprising perspectives related to diversity. Paper presented at the Annual Meeting of the AERA. New Orleans, LA, USA: April 1-5. ERIC document number ED467762.

Meyer T (2002) Novice teacher learning communities: an alternative to one-on-one mentoring. *American Secondary Education* **31**: 27-42.

Miller JB, Morley VS, Westwater B (2002) The Beginning Educator Support and Training Program in Connecticut. *Journal of Physical Education, Recreation and Dance* **73**: 24-27.

Mills H, Moore D, Keane WG (2001) Addressing the teacher shortage: a study of successful mentoring programs in Oakland County, Michigan. *Clearing House* **74**: 124-126.

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Orland-Barak L (2002) The impact of the assessment of practice teaching on beginning teaching: learning to ask different questions. *Teacher Education Quarterly* **29**: 99-122.

Pardini P (2002) Stitching new teachers into the school's fabric. *Journal of Staff Development* **23**: 23-26.

Patterson NC, Luft JA (2002) Informing expectations for induction: explorations of attrition among supported beginning secondary science teachers in the United States. *Teacher Development* **6**: 205-224.

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Quartz KH (2003) 'Too angry to leave': supporting new teachers' commitment to transform urban schools. *Journal of Teacher Education* **54**: 99-111(13).

Reynolds A, Ross SM, Rakow JH (2002) Teacher retention, teaching effectiveness, and professional preparation: a comparison of professional development school and non-professional development school graduates. *Teaching and Teacher Education* **18**: 289-303.

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Sakofs M (2002) Our graduates speak: an analysis of survey data provided by Eastern Connecticut State University (ECSU) program completers concerning their professional preparation and Connecticut's common core of teaching. Willimantic, CT, USA: ECSU (Research brief, spring).

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Wilkins-Canter EA, Edwards AT, Young AL, Ramanathan H, McDougale KO (2000) 'ateways to experience. preparing novice teachers to handle stress. *Kappa Delta Pi Record* **36**: 28-30.

Addendum

Since completing the systematic review, the review team have become aware of the existence of a dedicated website that specifically focus on induction. This can be accessed at:

<http://www.newteachercenter.org/>